INFLUENCE OF INTERNAL SENSATION-SEEKING TRAITS ON CREATIVE PRODUCTION

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF INSTRUMENTS

CHAPTER I

INTRODUCTION

Creativity is a multifaceted phenomena that has undergone a great deal of study over the last forty years. The growth of this field of study has many influences that complicate the understanding of the research efforts. For example, the field of study in which the researcher is working influences the character of the data gathered. The research on the creative individual in the arts varies from the research gathered on the creative individual in science, education, or in business. In addition, creativity is studied from four aspects. The four aspects in which researchers approach of creativity research are (1) the person, (2) the process, (3) the product, or (4) the situation (also referred to as the press) (Brown, 1989; Rhodes, 1987). Additional considerations to the field perspective and the aspect of the creative individual studied is the educational, philosophical, and psychological direction of creativity research.

Educational research efforts frequently look at creativity from the context of creative thinking and problem solving. Philosophical investigators of creativity ponder the long range view of the creative individual's qualitative development and survival. This long range view encompasses the philosophical discussion of divine inspiration, life forces, and intuitive genius as related to a life force. Psychological research efforts investigate cognitive and non-cognitive

influences on the creative personality and environment. Cawelti, Rappaport, and Wood (1992) summarized the psychological theoretical perspectives proposed by Busse and Mansfield (1980) as: (1) psychoanalytical, (2) gestalt, (3) association, (4) perceptual, (5) humanistic, (6) cognitive-developmental, and (7) composite theories.

The following paragraphs expand on the selected review of educational, philosophical, and psychological research in the field of creativity. The educational direction of creativity research studies methods to stimulate the student's creative experiences, for example, critical thinking, analogy-metaphor, or pattern analysis techniques. Training in critical thinking or divergent thinking and problem solving skills was introduced into elementary school environments in an effort to spur students' creative development (Torrance & Reynolds, 1978). Creative problem solving is an important part of creativity research. The foundation for problem solving is divergent production. Divergent production is the ability to produce several ideas for proposed problem scenarios. The evolution of Wallas' 1926 problem solving model of preparation, incubation, illumination, and verification has evolved into a third stage model development where there is acknowledgement of continual verification efforts by subjects (Lawson, 1990). The evolution of these problem solving models are depicted in Bull and Montgomery's (1990) Generic Creative Process Model (see Appendix A, Figure 1). Problem solving hinges on problem recognition or problem awareness. Problem awareness is the forerunner to the need for divergent production. Nevertheless, divergent production has the "most explicity developed theoretical base, [and] underlies most creativity tests" (Brown, 1989, p. 3). Researchers acknowledge that high scores

on divergent production tests or creative thinking tests do not correlate with real world creative production according to Kogan and Pankove (1974), but Torrance's (1972) studies show that there is a greater suggestion of correlation. All researchers acknowledge the extenuating circumstances of life-influences on creative production which is why creativity training and actual later-life creative production is a difficult area to research.

The concept of IQ is educational issue in creativity research. Torrance and Wu (1981) reported comparative studies of children with high IQ's and creatively gifted children. The study found no difference in the measured educational achievement between the two groups. There appears to be a need for an average or above IQ, but higher IQ scores do not necessarily influence creativity scores (Brown, 1989). Guilford (1950) suggests that the abilities tapped by intelligence tests are relatively unimportant for creative behavior within the educational process.

The second direction of creativity research is the philosophical issues of creativity. This direction recognizes the openness to the internal and external experiences by the creative individual. Understanding and tolerating this openness assists the creative individual in understanding their creative growth. Recognition of the openness required by creative individuals is expressed by Getzels and Csikszentmihaly (1976) when they suggest that the creative process and the stages of problem definition and problem solution do not have to be clearly defined for the individual to proceed in the creative process. Further development of recognition of the problem's true character may not be perceived correctly until the individual is already committed

and involved in the process. Philosophically this type of creative experience is an integrating experience not just analytical problem solving. Rugg (1963) suggests that the creative individual experiences an "inner fushion" of intellectual and emotional meaning leading the individual to respond to private needs and experiences (Carbone, 1969). The creative individual must be open to the totality of their experience (Rogers, 1959).

The third direction of creativity research concerns psychological issues of the individual. Researchers address individual and contextual factors that lead to creative production. There are several psychological theories to aid in the understanding of the creative event, and they are: (1) the psychoanalytic theory which recognizes explorations of the pre-subconscious mind, where primary processes take place, and the ego as a vehicle for addressing drive-related impulses; (2) the gestalt theory which recognizes the conscious restructuring of situations allowing the emergence of new patterns that are recognized as solutions; (3) the association theory which recognizes the creative results from combining unique associations among existing ideas; (4) the perceptual theory which recognizes the creative results that occur from approaching situations from new and varied perspectives; (5) the humanistic theory which recognizes the creative results that occur from being open to experiences and being able to reevaluate and manipulate those experiences; (6) cognitive-developmental theory which recognizes that creativity progresses through stages of growth; and (7) composite theories which combine versions of the above theories (Cawelti, Rappaport, & Wood, 1992). Cawelti, et al. (1992) propose the enclosed model (see Appendix A, Figure 2) to address the psychological influences on the creative process.

Creativity has been studied a great deal from differing field perspectives, different aspects of the creative individual and their experience, and from different educational, philosophical, and psychological directions. This body of research is frequently criticized for trying to quantify a qualitative experience. Further, the research methods are cited as having small samples, poor reliability and validity characteristics, and a non-structured direction (Brown, 1989). Despite these difficulties, there still exists support for Kubie's (1958) point-of-view that creativity is a healthy process and worthy of study (Bull, 1978; Cawelti, et al (1992).

Statement of Problem

In order to assist students in the understanding of their creative development, it is helpful to understand the internal experiences that occur during creative production. There are varied influences on creative production including external and internal stimuli. One of the internal elements that may stimulate creative production are the internal sensation-seeking traits of daydreaming, fantasy, imagery, and imagination. Parents and school environments are frequently not tolerant of daydreaming, fantasy, imagery, and imagination (Bull, 1978; Torrance, 1969). Consequently, these traits may be repressed in the individual. If students become aware of these traits, will this awareness strengthen their creative identity and be expressed by higher scores on a creative production test? Creative production is identified as a figural divergent thinking exercise.

Objectives

The objective of this study is to assess the internal sensation-seeking traits of beginning art and design students. A second objective of this study is to assess the level of figural creative production. A third objective of this study is to assess if the awareness of their internal sensation-seeking traits is an influence on students' figural creative production.

Assumptions

In research of creative effort, there are some inherent assumptions. Guilford (1950) proposed several of these assumptions and they are summarized as follows:

1. Creativity is a set of traits that are stable enough to be measured.
2. Creative abilities are continuously distributed and can be quantifiable regarding a comparison with normative standards.
3. Creative individuals will score higher on creativity measurements.
4. Creativity measurments may have low reliability due to the variations in actual momentary creative production.
5. Creative performance depends on more than motivational and temperamental traits.
6. Completion tests are adequate to measure figural creative production.
7. Pencil and paper recall tests measure internal sensation-seeking traits.
8. Art and design-related students are commonly traited.

Limitations

Attitude and fatigue may be limiting influences for some test takers. The test and scales were administered at the end of the spring semester. One group of tests was administered during a summer school session. In addition, though efforts were made to enlist student assistance in this research project, several students appeared to perceive the test and scales as a chore. Since the tests were voluntary, there was no coercion for students to take the test. The researcher observed that attitude was not a constant among students.

Definition of Terms

Creative Ability concerns an individual's composite of intellectual ability, personality variables, problem-solving traits, creative motivation, skill and ability in a particular area (Torrance, 1974).

Creative Thinking Abilities concerns the generalized mental abilities that is commonly presumed to be brought into play in creative achievements (Torrance, 1974).

Creative Production is the standard score/creativity index from the Torrance Test of Creative Thinking, Figural Test A based on the creative thinking processes of fluency, flexibility, originality, and elaboration (Torrance, 1974).

Figural Tasks concerns drawn response to stimuli of semi-completed figures or sets of parallel lines (Torrance, 1974).

CHAPTER II

REVIEW OF LITERATURE

Introduction

This investigation concerns the influence of awareness of internal sensation-seeking traits on creative production. There are three sections to this selective overview of research literature. The first section concerns the preconscious activity of internal sensation-seeking traits. This section is subdivided into three parts: (1) the theoretical construct of the preconscious as an influence on the creative individual, (2) trait theory and the characteristic traits of the creative individual, and (3) the internal sensation-seeking traits of daydreaming, fantasy, imagery, and imagination as an influence on the creative individual. The second section of the review concerns theories of how self-awareness and theories of motivation may influence the interaction of internal sensation-seeking traits and creative production. The third section of the review concerns the issues of the creative process, product, and situation in relation to internal sensation-seeking traits. The majority of this research material is based on the foundation laid by J. P. Guildford in 1950 and his "Structure-of-the Intellect". The research methodology is frequently questioned on the basis of construct validity, poor replicability, research bias, and inadequate sampling procedures (Brown, 1989).

The Preconscious Activity of Internal Sensation-Seeking Traits

The Preconscious as an Influence on the Creative Individual:

The development of the theoretical concept of the unconscious in relation to the creative individual made strides in the work of Freud (1959) and Jung (1965). They considered the source of creativity to be the unconscious. The unconscious is a theoretical construct and includes the theoretical activity of life not part of conscious thought. The preconscious has a similar definition but appears to describe acitivity closer to the conscious threshold (McConnell, 1986). Kubie (1958) theorized that the preconscious processes was part of the theoretical construct of the unconscious and this area permitted the necessary flexibility of symbolic imagery essential for the creative experience (Lesner & Hillman, 1983). The preconscious is the arena for symbolic manipulation and reassociation of ideas (Kubie, 1958; Parnes, 1987; Weisberg, 1986). There appears in the literature common recognition of an energy level below the conscious level that can be tapped by the individual (Ainsworth-Land, 1982; Aron & Aron, 1982; Cawelti, Rappaport, & Wood, 1992; Kris, 1952; Kubie, 1958; Parnes, 1987; Rugg, 1963). The preconscious is the internal environment of the individual and is considered not only a source of energy to motivate action, a place of withdrawal, but a place for idea exploration (Kaha, 1983). The preconscious theoretical construct holds within its framework the events of daydreaming, fantasy, imagery, and imagination (Bull, 1978). The capability to look into oneself is a frequently

cited trait of the creative individual (Barron, 1955; Buckmaster & Davis, 1986; Domino, 1970; MacKinnon, 1970). This self-reflection process associated with creative abilities is referred to in some literature as the trait of introspection (Bull, 1978; p. 55). Bull (1978) associates introspection and self-reflection with daydreaming, fantasy, imagery, and imagination. Further, he refers to this self-reflecting trait as internal sensation-seeking. Getzels and Csikszentmihalyi's (1976) study of artistic activities assert that introspection and imagination are evident among artists. Bull (1978) equates the concept of an optimal level of internal sensation seeking with an optimal level of external sensation seeking. Sensation seeking is exhibited by individuals who have low arousal levels. By increasing stimulation, performance levels can improve. Performance levels drop off at the high and low ends of stimulation. In adulthood, sensation seekers are high risk takers in social, vocational, or financial activities. At the same level, internal sensation seekers channel their risk taking into internal pursuits, such as daydreaming and fantasy, which may contribute to creative production. Both kinds of stimulation seeking change the level of stimulation in the individual's environment. In addition, there is recognition that the visual perception of the environment impacts sensation seeking activity. Visual and aural activity can enhance or impede creative production by over or under-stressing sensation levels (Bull, 1993).

Trait Theory and the Characteristic Traits of the Creative Individual:

The study of an individual's personality traits is a common

approach to studying creativity (Wehner, Csikszentmihalyi, & Magyari-Beck, 1991; MacKinnon, 1967). The concept of traits as characteristics to describe an individual or an individual's performance was first proposed by Sir Francis Galton in 1874 to explain the similarities and differences among individuals (McConnell, 1986). In 1937, Allport expanded on Galton's trait theory to include the concept that traits are a motivating element in an individual's life. As such, traits are future-oriented motivators. Allport's proposal of functional autonomy for individuals considers traits as an energizing force with the creative development of the individual as the result. In other words, traits are related to an individuals' values, goals, and aspirations. Pleasure is derived as traits are exercised (Allport, 1937, cited in Stein, 1960: McConnell, 1986). In an effort to expand on Allport's theory, Baumeister and Tice (1988) propose the concept of a theoretical construct called meta-trait. They propose that the concept of meta-trait expands on the concept of past trait research. They suggest that personalities are constructed out of different trait dimensions, and their meta-trait hypothesis states that a given trait dimension will not apply equally well to all individuals. For them, the concept of meta-traits focuses on personality and behavior in the environment of self-knowledge.

In addition to the individual being motivated unconsciously by traits is the additional concept of and self-awareness of one's creative traits acting as a motivating element of creative production. A characteristic of humans is the capacity for self-reflexive thought. Self-reflexive thought is the ability to think about oneself. Identifying oneself as creative by being in a creative program and by

recognizing impulses of internal sensation seeking, one may invest greater energy into creative production to fulfill one's identity, or fulfill one's "reflected self" (Dowd, 1989, p. 234). MacKinnon (1970) found that creative persons were "open to the experience of the inner self and the outer world" (MacKinnon, 1970, p. 29).

Personality, behavior, and self-knowledge is the basis of MacKinnon's 1960 (1967) study of architects. The study acknowledged the following traits of the creative personality: (1) intellectual competence, (2) inquiringness as a habit of mind, (3) cognitive flexibility, (4) aesthetic sensitivity, (5) sense of destiny, (6) ability to evaluate ideas, (7) independence, (8) originality, (9) personal stability and adjustment, (10) maturity and responsibility. Buckmaster and Davis (1986) developed Rose, an instrument that measures self-actualization; and, list similar traits of creative individuals, such as: adventurous, aggressive, curious, dissatisfied, emotional, impulsive, independent, liberal, non-conforming, playful, sensation seeking, and tolerant of ambiguity. Baumeister and Tice (1988) observe that all traits are not characteristic of all creative individuals. As the research on creativity has developed, researchers commonly measure the following traits of the individual in creativity research: fluency, flexibility, originality, elaboration, sensitivity to problems, problem defining, visualization, imagination, ability to regress, metaphorical thinking, analysis, synthesis evaluation, transformation, extending boundaries, intuition, predicting outcomes, resisting premature closure, concentration, and logical thinking (Buckmaster & Davis, 1986; Domino, 1970; Maddi, 1965; Schaefer, 1973; Torrance, 1968).

The Internal Sensation-Seeking Traits of Daydreaming, Fantasy, Imagery, and Imagination:

The occurrence of internal sensation seeking includes the attributes of daydreaming, fantasy, imagery, and imagination. Daydreaming and fantasy are used interchangeably by Singer and Schonbar (1961). Daydreaming is a subjective image-forming process described as a "free-form reverie" (Bull, 1978). Daydreaming can be a sensation increasing tension or a tension reduction experience (Windholz, 1970). Time manipulation in this reverie state can provide incubation for ideas and unusual juxtaposition of ideas that may contribute to insights (Aron and Aron, 1986; Carbone, 1969; Rugg, 1963). In addition, Rosenberg (1976) stresses that conscious use of daydreaming and fantasy can be helpful in eliminating or reducing blocks to creative production. The creative individual practices the recombination of reality searching for avenues to alter the subject matter of their fantasy or daydreams (Chambers, 1969) while developing the facility for problem-solving (Parnes, 1967). Barron (1955) suggests that the creative individual has a characteristic tolerance of the material thrust from below conscious thought.

Feldman (1990) considers daydreaming and fantasy as the vehicle for tranforming the inner and outer worlds for the individual. Freud (1908, cited in Aron & Aron, 1982) theorized the importance of fantasy as a mobilizing force for the individual. Getzels & Csikszentmihalyi (1966) asserted that fantasy exploration raised the mental level of excitement. Bull (1978) proposed that this intertwining of people, objects, and events in the reality--non-reality state presents the possibility of unique relationships occurring to spur creative vision.

Bull's (1978) study indicated that fantasy and daydreaming were better predictors of creativity for females than males.

Daydreaming and fantasy are frequently restricted in typical primary and secondary school environments (Torrance, 1972). Torrance (1972) argued that gifted and creative students may have a more difficult time forming a positive self-concept due to parents and teachers preference for commonly accepted ideas, values, and concepts. The early parental and teacher discouragement of value questioning, attitude exploration, daydreaming, and fantasy expression may delay vocational development of creative children (Dowd, 1989). Torrance (1962) hypothesizes this rejection of natural impulses as a contributing factor for a drop in creativity scores for children soon after they enter school. Kubie (1958) stressed that preconscious activity is the sanctuary of daydreaming and fantasizing, and therefore must be allowed expression.

Another form of internal sensation seeking is mental imagery. Vividness of mental imagery is an important creative trait. Mental imagery is believed to be related to fantasy experiences (Bull, 1978). Imagery "taps a highly subjective, idiosyncratic, and fluid style of cognition that facilitates the transcendence of conventional, reality restricted thinking" (Suler & Rizziello, 1987). Imagery derives creative potential from the close association with primary process activity (Suler, 1980).

Inconsistent correlations between questionnaires of visual imagery ability and creativity were reported by Schmeidler (1965) and Forisha (1978). Durndell and Wetherick (1976) found that being able to control imagery correlated with creativity, but the subjects' vividness of

imagery was not related. Nevertheless, Khatena (1978) reported the commonness of mental imagery references when discussing the creative experience with individuals. This reference to imagery was a common occurrence whether the individual interviewed was in science, mathematics, or the arts. Barron (1955) concluded that imagery is an important component in the process of solving tasks and in the mental manipulations of spatial relations. Imagery is one of the leading factors for males and females in Bull's (1978) study which included internal sensation seeking traits. He suggests that imagery involves the ability to replicate, manipulate, integrate, and synthesize pictorial, symbolic, and behavioral stimuli (Bull, 1978). Rhodes (1981) found significant correlation between mental imagery, vividness and elaboration, and between mental imagery vividness and total creativity.

Torrance and Khatena (1973, cited in Khatena, 1976) found significance between information processing style and brain-hemispheric preference. Their Sounds and Images is an indicator of right-brained measures of creative thinking ability (Torrance, 1981). Khatena (1975) explored the relationship between autonomous imagery and creative self-perceptions using the Gordon Test of Visual Imagery Control and Something About Myself. Khatena found that "adults in college who perceived themselves as highly creative are more likely to have greater autonomy of imagery" (Khatena, 1975; p. 358). Khatena (1976) stressed the validity of studying the imagery processes in relation to cognitive processes and the view that images are related to stored information and not just mental mechanisms (Khatena, 1976). Further, Shaw and DeMers (1986) state the importance of imagery in the

process of controlling or manipulating images in the individual's environment and by implication aid in the individual's creative process. Arnheim (1969) suggests that thought by necessity incorporated imagery. He proposed that imagery moved along an abstract to concrete continuum depending on the incorporation of words in relation to the images. Short (1953) suggests that the types of images that are carried in the mind contribute to the way the external world is viewed.

Ainsworth-Land (1982) refers to four orders of creativity and imagery development. The first order refers to beginning awareness and learning, not in the manner of introspection, but in the manner of encoding material spontaneously or learning a new area. The second order refers to goal directed imagery. This stage involves the building on or changing of existing patterns designs, concepts, and requires intentional action. The third order of creativity and imagery development refers to the need of changing perception or to break up one's perceptual set to all elements for new connections and associations to occur. The fourth order refers to an "attitude for phenomena". This attitude permits the individual to reach beyond normal perception. This is a stage of letting go and abandoning oneself to a "spontaneous flow of arising thoughts and images" (Ainsworth-Land, 1982, p. 24).

Imagination is the fourth trait to be discussed regarding the issue of internal sensation-seeking traits. Gerard (1946, cited in Stein, 1960) considers imagination to be the action of the mind that produces new ideas. The idea can be a flash of insight or a fully formed concept or image. Novel ideas result from imagination. Reason and

logic take over for purposes of evaluation. Imagination is considered a theoretical construct between receiving an idea and the expression of the idea. Imaginativeness is a trait correlating with the creative personality (Kaha, 1983; MacKinnon, 1970). Getzels and Csikszentmihalyi (1966) concluded that the level of imaginative ability was significant in identifying the public success of producing artists. Imagination is the mental form of expanding experiences or the re-experiencing of events that occupies a large percentage of the day-to-day brain activity of individuals (Khatena, 1975). Creative thinking harnesses this ability and energy into focused directions producing creative results (Parnes, 1987). Imagination describes the ability of the creative individual to shift, alter, or expand existing mental boundaries (Kaha, 1983). Imagining is the connecting of unlikely elements. "The person involved in the creative process may be semiconscious or more-or-less aware of the operations of their imagination" (Wheeler-Brownlee, 1985, p. 261).

Rugg (1963) suggests that imagination involves the whole psychological and physiological systems, ie. the mind and the body. This fushion of mind-body action is similar to the field-force concept in physics. He proposes that imagination is a function of the awareness of external objects and impacted by quality of relations which affect the sensory processes. This interblending draws on the individual's inner drives, needs, and frustrations (Carbonne, 1969). Rugg (1963) states that this interblending of drives, needs, and images is a transformational process that is a self-forming. "The stuff of the mind is transformed into meaningful response...and, that the imagined conception is the key to all creative acts...for we behave

first on the basis of our felt conceptions, only after that verbalized concepts" (Rugg, 1963, p. 298).

This selected review of literature appears to indicate the influence of traits of internal sensation seeking as playing a prominant role in the creative experience of the individual. The younger students' awareness of the operation of these traits and the acceptance of these traits as part of their creative lives may influence their motivation in the creative process. There is recognition that usually beginning art and design-related students cannot invoke creativity on demand, but with the tolerance and enhancement of internal sensation seeking experiences creative encounters may occur. Further, there appears that awareness of one's traits of daydreaming, fantasy, imagery, and imagination are manipulable enough to assist in widening avenues to creative production. The literature appears to indicate that the concepts of daydreaming and fantasy appear to operate as a vehicle to pass momentarily external constraints. Imagery and imagination appear to provide a pathway to formulate new associations. Motivation to produce a product or concept is a critical element for the creative experience. The following section looks at the issue of awareness and motivation in the creative process.

The Interaction of Internal Sensation-Seeking Traits with Self-Awareness and Motivation

The following section looks at motivation of the creative individual and the influence of self-awareness. Despite conflicting measures of self-concepts and self-awareness, Dowd (1989) suggests a moderate correlation between creativity and self-concept. William James is attributed with the concept "that individuals develop a self-feeling based on how they think they appear to other people...termed the social self or the reflected self" (Dowd, 1989, p. 234). Rogers (1954) proposed that internal knowledge and consistency of self is important. Rogers (1954) states that the creative individual needs to be aware of all varied sensings and perceivings which are going on within the individual. Further, Rogers theorized that repressed internal sensations produce distorted products (Rogers, 1954).

MacKinnon's (1970) investigations into personality recognizes that creative individuals are especially open to experience of the inner self. In studies by Shaeffer, Diggins, & Millman, (1976) found female creativity correlating with openness to inner experiences and sensation seeking; and, male creativity correlating with openness to theoretical and aesthetic experiences.

Cawelti's, et al. (1992) model (see Appendix A, Figure 2) refers to the creative process as "one big circle" (p. 92) and that artists move into the non-visible world, the preconscious world of daydreaming, fantasy, imagery, and imagination (identified in this paper as internal sensation-seeking traits or ISS) where they become unbounded...." Cawelti, et al.'s (1992) interviews of artists from various fields

support their hypothesis that creativity does not move from stage to stage motivated from the outside but moves as an "unfolding vision" (p. 92) motivated from internal energy. They conclude:

> Clearly, artists experience a high degree of simultaneity as they work. Any creative endeavor cannot be explained--at least to the satisfaction of working artists--in terms of hierarchies or stages of development. Rather, artists experience a definite sense of many things going on at once--working out new ideas, trying old ideas, experimenting, going backwards, going forwards--simultaneously. There appears to be an anti-climatic ending, as when the project gets sent in, or displayed. There also does not seem to be a definite beginning. There is certainly no clear middle--it differs from work to work, time to time, and mood to mood, shifting constantly (p. 92).

Cawelti, et al. (1992) theorize that the concept of simultaneity is an important occurrence in the creative act and is representative of what Parnes (1987) refers to as third generation models of creative thinking (see Appendix A, figure 3). What the interviews conducted by Cawelti, et al. (1992) also stress is the concept of internalized self-propelling experience of the creative act. Maslow (1957) interpreted the creative actualizing experience as "primary creativity" or "peak experience" (p. 93). He says that the primary creative experience "comes easily and without effort as a spontaneous expression of an integrated person, or of a transient unifying within the person. It can come only if a person's depths are available to him, only if he is not afraid of his primary thought processes" (Maslow, 1957, p. 93).

Rugg (1963) identified an individual's depths as the transliminal

mind. The transliminal mind would compare to Maslow's primary thought processes. Within the theoretical construct of the transliminal mind is the concept of imagination, the place of facile manipulation of symbols, ideas, and concepts. Rugg theorizes that tensions are produced by the imagery from this area and the result is stimuli presented to the individual. The stimuli forms the suggestion. The concept of suggestion will be acted upon if (1) there is "relaxation through concentration of attention upon the goal;" and (2) "acceptance of the suggestion" (Rugg, 1963, p. 303). Rugg refers to the influence on the individual from the transliminal mind, or imagination, of the abstract thought, also referred to as the incomplete act, when he says, "Other things being equal, we remember the incomplete act" (Rugg, 1963, p. 303). Rugg felt that the imagination and imagery of the transliminal mind is a motivating influence on the creative individual to act out their imaginings. Maddi (1965) felt that the development of egocentrism of internal compulsions for self-expression in search for quality aided persistence in creative development. Csikszentmihalyi and Getzels (1970) felt that the attitude of a concern for discovery is the motivating quality in creative expression. Alamshaw (1967) refers to inherent motivation being triggered by security and cultural needs. The security needs refer to biological tensions, sense, sensory, activity, or visceral; and to psychological tensions comparable to Maslow's self-actualization hiararchy expressed through a heightened sense of beauty and a sense of self-acceptance. Awareness of "motivational push and pull" dynamics support creative expression (Alamshaw, 1967, p. 307).

The Creative Process and Internal Sensation Seeking

Depending on the field involved, the creativity of the individual must be expressed in the external world. Dowd (1989) remarks that "unless one produces something, one cannot be considered creative. Thus, pure mental activity without a resulting product is not creative" (p. 233). Corresponding with the concept of the individual creating something is for the individual to have the physical attributes and abilities and the technical training to create elements for their appropriate field. In addition, if creativity is attributable to association or the recombination of ideas and concepts, there must be developed in the individual adequate exposure to and storage of ideas and concepts appropriate to their work. Further, emotional elements and environmental supports must assist the individual's creative effort (Martindale, 1989).

The foregoing paragraph mentions elements within and without the individual that appear critical for creative expression. The process of the creative expression can follow several different models of creative process. But, all the models recognize the experience of idea or problem recognition. Torrance's (1974) theory on the creative process gives emphasis to idea recognition. This facility in the creative individual is described as a process of being sensitive to deficiencies, gaps, missing elements, or disharmonies in events facing the individual. The following processes, after identification of an idea or problem, relate to the searching for hypotheses that may

address the identified problem, testing the hypotheses, modifying and retesting the hypotheses.

Kris (1952), Kubie (1958), & Rogers (1959) addressed the activity of the preconscious contributing to true creative results. Kris (1952) felt it was important to temporarily abandon logical, rational thought to be able to move beyond constrictive thinking of reality. Kris (1952) recognizes the ego state as more receptive to drive-related impulses and ideas of primary process thinking. The ego experiences pleasure from the release of energy from primary process thinking. "The person must deliberately allow daydreams, fantasies, and the like to intrude upon his thinking. Later in an elaborational phase, the ideas are subjected to rigorous logical evaluation" (Busse & Mansfield, 1980, p. 93). Kubie (1958) challenged the belief that creativity is always the result of neurosis. He stresses the loss of energy indulging in neurotic behavior. He emphasizes the role of the preconscious efficiently producing symbols of concepts to portray information to the self rather than the relaying of internal verbal information. Rogers (1959) defined the creative process as "the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other" (Rogers, 1959, p. 71).

Incorporating the internal/external experiences of creativity can be presented in several models. Guilford's (1967) "Structure of the Intellect" (see Appendix A, Figure 4) builds on the 4 stages of

previous researchers Wallas (1926, cited in Brown, 1989). Divergent-production abilities are central to Guilford's problem-solving model (Brown, 1989). Research in applied areas of art and design related fields suggest a greater flow of evaluation process occurring as exemplified in Lawson's (1990) model (see Appendix A, Figure 5) of the creative thinking process. He stresses that verification is a continual process. Bull & Montgomery's (1990) "Generic Creative Process Model" (see Appendix A, Figure 1) correlates training methods appropriate to process stages. Frustration is a recognized stage preceding incubation. An example of this stage is the early theorizing on unconscious process occuring during the creative process exemplified by the frequent quote from Poincare (1913, cited in Weisberg, 1986) on his efforts to define Fuchsian functions. The frustration at problem solving and laying the work aside and allowing the unconscious to continue to work is a theory expressed through the research literature on creativity (Weisberg, 1986). There is also the recognition that other processes and influences are occurring, during incubation, but the emotional state of frustration may trigger preconscious activity (Busse & Mansfield, 1980).

The Creative Product and Internal Sensation Seeking

The research literature sometimes intertwines the discussion of the creative person, the creative situation, and the creative product (Besemer & Trefinger, 1981). The concern of research for understanding the creative product is referred to as the 'criterion problem' (Treffinger & Poggio, 1972). Products are the tangible results of

creativity and are necessary to evaluate creative effort (Rhodes, 1961). The Parnes model (see Appendix A, Figure 6) refers to problem recognition as instrumental to creative effort. Product evaluation is linked to product production (Parnes, 1967).

One of the criteria accepted among researchers as evident is the concept of 'value'. Value is defined as having immediate, long range, social, economic scientific, or being of economic importance to others (Besemer & Treffinger, 1981). Amabile (1983b) recognizes that the creative product must be produced in a heuristic fashion, for example, that there would exist no known solution for the problem prior to its solution. Jackson and Messick (1965) proposed four additional elements to be addressed when evaluating the creative product: (1) novelty or unusualness, but not just the bizarre; (2) appropriateness of the solution to both the problem and to the solutions' various parts; (3) transformation or the ability of the product to actually create new forms rather than to merely improve pre-existent ones; and, (4) the power of condensation of the product, the combined economy and elegance of the solution which is not simply right but just right. Further, transformation is a concept that can be explained as a result or product that "breaks through tradition and leads to a new perspective or way of viewing reality" (Brown, 1989, p. 12). Condensation can be further expanded to mean a product or result that requires repeated deliberation preventing rapid psychological closure (Brown, 1989).

Ward and Cox (1974) developed two studies that evaluated product. The criteria that Ward and Cox (1974) used included: originality, infrequency, attractiveness, humor, complexity, and effort. The three most important factors making up the judgment were humor, amount of

effort, and infrequency. A value recognized from this reseach project was that the evaluation process showed the importance of judging relative creativity on the basis of comparing products within a set or a universe which has at least some common characteristics (Besemer & Treffinger, 1981). In an earlier study, Ghiselin (1963, cited in Brown, 1989) divides the creative product or results into two categories: primary and secondary. The primary is characterized as the result of insightful communication. The secondary category of creativity is characterized by the other attributes listed above, such as novelty, humor, and uniqueness (Brown, 1989).

The Creative Situation and Internal Sensation Seeking

The creative situation is supposed to foster creative activity and produce creative product. Rogers (1959) refers to two fundamental conditions constructive for creative production. The first condition is psychological safety. Psycholgical safety must be established by three associated processes. The initial process requires that the individual be accepted unconditionally. As the individual realizes their acceptance, they reduce rigid reactions and allow a flow of experience and discover what it means to be themself. The second condition within the context of psychological safety is eliminate 'external evaluation'. "Evaluation is always a threat, always creates a need for defensiveness, always means that some portion of experience must be denied to awareness" (p. 79). Elimination of external evaluation from the creative production process does not eliminate external reaction to the product. What is being eliminated is the

judging of another's product by our vested interest in our own locus of evaluation. The evaluative process must come from the internal expression and acceptance of the individual creating. Koestner, Ryan, Bernieri, and Holt (1984) studied the impact of internal/external motivation. They found that the level of artistic production was impacted by establishing controlling limits. In addition, Koestner, et al. (1984) recognized that if the controlling limits were informational in character there was less of an impact on production. Roger's (1959) third condition for the creative situation regards empathic understanding. Empathic understanding when coupled with unconditional acceptance and lack of external evaluation, provides for deep support of the individual's creative experience. The individual knows that they are known for what they are and do and are still accepted.

Summary of the Review of Literature

This selected review of literature has looked at preconscious activity, trait theory, and the internal sensation-seeking traits of daydreaming, fantasy, imagery, and imagination. The influence of internal sensation-seeking traits is related to the concept of being open to internal experiences by creative individuals. See Figure 7 for a matrix of traits studied by the identified researchers in this review. Several researchers theorize and a portion of the research data supports the theory that awareness of one's traits of daydreaming, fantasy, imagery, and imagination may assist in the development of creative production. Consideration must also be given to the creative process, the creative product, and the creative situation in which the indivdual is working. Part of the creative process includes a time of

incubation. This is an appropriate opportunity for internal sensation seeking to operate on the preconscious level. The creative product issue involves an evaluation process which can be affected by internal sensation seeking according to the tolerance permitted by the evaluative criteria. The creative situation provides psycholgical security for internal sensation seeking to take place and, therefore, contribute to the process, the product, and the individual.

CHAPTER III

METHODS AND PROCEDURES

Introduction

This chapter will discuss the research design for the project. Specifically, the sample composition, research instruments used, administration of the instruments, and the statistical procedures applied in this study will be discussed.

Research Method

The purpose of this study is to determine if creative production will be influenced by the awareness of internal sensation-seeking traits. The null hypothesis statement would be that creative production is not influenced by awareness of internal sensation seeking traits. A concern of research in creativity is validity and reliability. Creativity research is frequently flawed by the use of small samples or inappropriate measures (Brown, 1989). This project attempts to address the issue of adequate sample size. Further, since the effort is to investigate the experience of the creative individual, intent and effort on the part of the student is a critical element in the testing situation.

This research project is an explanatory study. This project is

an effort to explain an increase in creative production of students as a function of increased awareness of traits of internal sensation seeking. The traits of internal sensation seeking are identified as daydreaming, fantasy, imagery, and imagination. Researchers frequently identify these traits with the creative personality (Barron, 1955; Bull, 1978; Davis, 1975; Domino, 1970; Duradell & Wetherick, 1976; Forisha, 1978; Khatena, 1976; Torrance, 1972a).

The definition for creative production is the standard score/creativity index established by the Torrance Test of Creative Thinking (TTCT) normative standards. The mean score for the adult age group is 107.96. The creativity index ranges from 41 to 190. The range for the internal sensation seeking scale is 36 to 180. Scale results from undergraduate students at the University of Wisconsin taking a 1-credit course in creativity had the following mean scores: males 147.83 and females 148.49 (Bull, 1978).

Sampling Procedures

The original sample consisted of 211 respondents of which four units were eliminated due to incomplete production. The revised sample consisted of 207 students in freshman and sophomore art, architecture, interior design and architectural landscape courses. These samples were selected for two reasons. The first reason is that art and design-related courses have a number of individuals that identify themselves as being creative and might have a vested interest in developing their creative potential. The second reason for these classes being selected is because of their graphic and figural abilities and interests versus creative individuals in music or writing

classes. The freshman and sophomore classes were targeted because they are the students recently graduated from a secondary school system. The sample is composed of females (58%) and males (42%). Ages range between 18 to 42 with a mean age of 22 years.

The students are from Oklahoma State University (150), the University of Central Oklahoma (41), and Oklahoma Christian University (16). All students except the University of Central Oklahoma were administered the tests the last two weeks of the 1992 spring semester. The students at the University of Central Okalahoma received the tests the first week of summer school, 1992.

Research Instruments

The Internal Sensation-Seeking Scale

The Internal Sensation-Seeking Scale is a creativity indicator based on the creative traits of fantasy, daydreaming, imagery and imagination. These traits are identified with the creative personality (Dellas & Gaier, 1970; Forisha, 1978; Gowan, 1978; Khatena, 1978). The Internal Sensation-Seeking Scale (ISS) samples various aspects of (a) fantasy, (b) daydreaming, (c) imagery, and (d) imagination (Bull, 1978) (See Appendix C Instruments).

The Torrance Test of Creative Thinking, Figural Test A, is a recognized test of creative production (Davis, 1986; Kimball, 1978) (See Appendix C Instruments). It is a test of divergent production using figural elements. The figural elements are scored according to abstractness, elaboration, fluency, originality, and resistance to premature closure. Incorporated into the creativity index is an allowance for emotional expressiveness, storytelling articulateness,

movement and action, synthesis of concept, unusual visualization, extending or breaking boundaries, humor, richness of imagery, and fantasy. All three figural activities were used. The figural test is considered appropriate for elementary to graduate student levels (Torrance, 1990, 1974). The TTCT is a standardized test with normative scores available. The scores were calculated to identify the standard score/creativity index. The standard score/creativity index scores were compared to the ISS Scale scores.

Data Collection

The administration of research instruments was based on random distribution of three color-coded packets. The color coding of the packets are white, gray, and pale yellow cover sheets. The demographic questions are printed on the cover sheets. The white packet contains the following ordered items: Internal Sensation Seeking Scale and Torrance Test of Creative Thinking, Figural Form A. The gray packet contains the following ordered items: Torrance Test of Creative Thinking, Figural Form A and Internal Sensation Seeking Scale. The pale yellow packet contains the following ordered items: Instructions to 'Be Creative', the Torrance Test of Creative Thinking and a 10-minute problem solving scenario.

Preliminary instructions were given at the beginning of each testing session according to the Torrance Tests of Creative Thinking, Directions Manual, Figural Forms A and B by E. Paul Torrance (Scholastic Testing Service, Inc., 1990). The Torrance test was referred to by the title "Thinking Creatively With Pictures". References to the students being in a test situation was avoided.

After the random distribution of packets to each student, students rearranged their seating to sit in groups according to their packet color. This arrangement was necessary to facilitate timing requirements.

The tests were administered within a single class session. The Internal Sensation Seeking Scale is completed in 10-minutes. The Torrance Test of Creative Thinking takes 30-minutes. Introductions and instructions take 5-minutes.

Scoring Instrument

The Torrance Tests of Creative Thinking, Figural Test A was scored according to the Streamlined Scoring Guide Figural A and B (Torrance, Ball, & Safter, 1987; Scholastic Testing Service, Inc., 1992). The standard score/creativity index is comprised of the raw scores for fluency, originality, abstractness of titles, elaboration, and resistance to premature closure. Bonus points are added to the standard score for creative strengths of emotional expressiveness, storytelling articulateness, movement or action, expressiveness of titles, synthesis of incomplete figures, synthesis of lines, unusual visualization, internal visualization, extending or breaking boundaries, humor, richness of imagery, colorfulness of imagery, and fantasy. Scores range from 41 to 190.

The Internal Sensation-Seeking Scale was scored by adding the rating of individual items. Positively scored items have the following values: alternative "A" = 1 point, "B" = 2 points, "C" = 3 points, "D" = 4 points, and "E" = 5 points. The values are reversed for negatively scored items. The items scored negatively are: 6, 11, 14, 15, 17, 18,

19, 24, 26. Scores range from 36 to 180.

Data Analysis

The statistical procedure of Analysis of Variance was performed on the student's TTCT scores. The results may indicate an influence on student's level of creative production as measured by the TTCT by taking the ISS scale prior to the TTCT.

The Pearson Product-Moment Correlation was conducted to ascertain the correlation between the student's sensation-seeking traits as measured by an ISS score and their creative production as measured by a TTCT creativity index/standard score.

INFLUENCE OF INTERNAL SENSATION-SEEKING TRAITS ON CREATIVE PRODUCTION

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Abstract

Previous research indicates a relationship between creativity and the internal sensation-seeking traits of daydreaming, fantasy, imagery, and imagination. Trait theory suggests that the traits of creativity are motivating influences on individuals. This study was conducted to determine if self-awareness of student's internal sensation-seeking traits would enhance creative production. Packets containing differing ordered arrangements of Internal Sensation-Seeking Scales (ISS) and the Torrance Test of Creative Thinking, Figural Test A (TTCT) were randomly distributed to beginning art and design students. There was no significant relationship indicating an influence of the Internal Sensation-Seeking Scales on the Torrance Test of Creative Thinking, Figural Test A.

Influence of Internal Sensation-Seeking Traits on Creative Production

Introduction

The creative capacity of students pursuing art and design-related careers develops and expands over time. Their creativity is influenced by the environment, the creative processes used, evaluation of their creative efforts, and life experiences. Many students choose majors in art and design because they either recognize their own creative abilities based on their intuitive preference for creative activities or recognize an inner desire to continue past creative experiences. Success in actualizing creative development may be enhanced by greater self-awareness of internal experiences. Creativity research literature recognizes the need for greater self-awareness by all individuals and the trait of tolerance of internal experiences by creative individuals.

Though creativity researchers do not agree on a definition of creativity, there is abundant theory and research data on many of the aspects concerning creative individuals, their traits, the processes they use, and the most creative environment in which they will be most productive. There appears to be a void of creativity research to assist individuals, and in particular beginning art and design students, in understanding their

own selves and their creative development. This article addresses students' creative development and whether an increase in awareness of internal activities or their internal traits of daydreaming, fantasy, imagery, and imagination will enhance their creative production.

Theorists and researchers studying creativity from the perspectives of education and psychology recognize levels of creative production. Lower level creativity can be considered to be functioning during goal-projected problem-solving activities which use divergent production techniques. Product controls and restraints are characteristic of this process. Problem-solving techniques are incorporated in creativity training and are applied in the fields of education, science, business, and the arts. The critical issue to recognize in a discussion of the levels of creativity is that whenever the goal or path is delineated, the creative process operates under restrictions and is considered a lower level of creativity. Higher levels of creativity can be characterized as self-directed and self-motivated transformation and condensation of a concept, an element, or a product (Ainsworth-Land, 1982; Brown, 1989; Parnes, 1967, 1987; Pickard, 1990; Tardiff & Sternberg, 1988).

Ainsworth-Land (1982) refers to four orders of creativity, imagery, and imagination development. The first order refers to beginning awareness and learning, not in the manner of introspection, but in the manner of encoding material spontaneously or

learning a new area. The second order refers to goal-directed imagery. This stage involves the building on or changing of existing patterns, designs, and concepts. It also requires intentional action. The third order of creativity and imagery development refers to the need for changing perception or breaking up one's perceptual set to all elements for new connections and associations to occur. The fourth order refers to an "attitude for phenomena." This attitude permits the individual to reach beyond normal perception. This is a stage of letting go and abandoning oneself to a "spontaneous flow of arising thoughts and images" (p. 24). Barron (1955) suggests that this fourth stage is an important, but uncommon, experience. He proposes that the creative individual has a characteristic tolerance for the material thrust from below conscious thought levels which is the level of the preconscious. The activities of this level include daydreaming, fantasy, imagery, and imagination. Bull (1978) incorporates these traits into a concept called internal sensation seeking.

The internal sensation seeking activities of daydreaming and fantasy are used interchangeably by Singer and Schonbar (1961). Their research results suggest that individuals with the capacity for high and low fantasy and daydreaming have traits comparable to individuals with high and low creativity levels. Daydreaming is a subjective image-forming process that also can be described as "free-form reverie" (Bull, 1978, p. 9). For art and design

students developing their creative capacity, time manipulation in this reverie state can provide incubation of ideas and unusual juxtaposition of ideas that may contribute to insights (Aron & Aron, 1982; Bull, 1978; Carbone, 1969; Rugg, 1963). In addition, Rosenberg (1976) stresses that conscious use of daydreaming and fantasy can be helpful in eliminating or reducing blocks to creative production. Getzels & Csikszentmihalyi (1966) assert that fantasy exploration raises the mental level of excitement, and that Freud (1908, cited in Strachey, 1959) theorizes that fantasy can operate as a mobilizing force for the individual. Bull (1978) proposed that this intertwining of people, objects, and events in the reality-non-reality state presents the possibility of unique relationships occurring to spur creative vision.

Imagery and imagination are the other two traits of internal sensation seeking, and they provide additional insight into creative production. Imagery is how new ideas are received and taps a subjective and idiosyncratic style of cognition that aids in the transcendence of reality-restricted thinking (Suler & Rizziello, 1987). Imagery is related to primary process activity (Suler, 1980), and thus is part of fantasy and daydreaming (Bull, 1978). Further, Rhodes (1981) found significant correlation between mental imagery, vividness and elaboration, and between mental imagery vividness and total creativity. Khatena (1975) found that college students who perceived themselves as more

creative had greater autonomy of imagery. Thus, theory and research do appear to support the concept that vividness of imagery is instrumental to creative individuals, and in particular may be a helpful trait to be enhanced by art and design students.

Imagination, the remaining trait of internal sensation seeking, incorporates or adds to imagery a process of visioning past or future experiences in response to previous experiences (Parnes, 1987; Pickard, 1990). Evaluation, as a cognitive process of reason and logic, is an aspect of imagination and is part of the imagining process that occurs during the exploration and transformation of images. Imagination is an accepted trait of the creative individual. The management of the imagining, visioneering, and evaluation processes is an important element for the creative individual's success (Getzels & Csikszentmihalyi, 1966; Kaha, 1983; MacKinnon, 1970; Parnes, 1987). Developing avenues to enhance one's creative capacity requires self-awareness.

Whether design students are operating on lower divergent production levels of creativity or aspiring for the transformational creative inspiration, there are internal and external influences operating on them. The next few paragraphs will review concepts of motivatation, self-awareness, and trait theory as influences on the internal forces of the creative student.

Maslow (1959) proposed that the creative individual is driven from spontaneous fantasy and imaginings to deliberate reality testing. Rogers (1959) also hypothesizes that creativity is a drive in the sense that creative individuals are self-motivating toward actualizing their potentialities. Creative individuals must activate their creative capacities. May (1959) suggests that creative expression results as a unification of the individual's internal experiences. The unity occurs as the individual forges intellectual, volitional, and emotional functions into a creative flow. The desire for unification of internal forces pushes the individual forward. Dowd (1989), building on William James theory of the reflected self, hypothesized that the internal corroboration of the identity that individuals seek forges a consistency between the internal impulses and external production. Students who recognize the need for creative expression and subsequent establishment of themselves as creative students, also must recognize all of their creative traits, abilities, and internal impulses.

Allport's (1937) trait theory proposed that traits are motivators. Further, he proposed that traits require not only acknowledgement, but exercise by the individual. In addition, if traits are repressed, the creative product can become distorted (Kubie, 1958; McConnell, 1986). Maslow (1959) expresses the concept that the primary creative experience can only come from the persons's depths that are available to them and only if they

are not afraid of their primary thought processes which are characterized by internal sensation seeking activities. Rogers (1959) states that the creative individual needs to be aware of all the varied sensings and perceivings which are going on inside and have access to expressing them to maintain health, as well as to produce a creative product.

Overall creative production by the design student may be enhanced if they take the time to explore and express their internal sensation seeking traits of daydreaming, fantasy, imagery, and imagination. For the student, developing their self-awareness and expressing their daydreams, fantasies, and imagery may strengthen their internal traits and enhance their creative production.

Students may benefit from a greater self-awareness of their own creative traits. This awareness may assist them to understand the changes that they will go through as they face the different demands placed on their creative energies. Being aware of their internal sensation seeking traits may assist in keeping avenues to their inner resources open and maintaining productivity. The body of research on creativity is very broad but consistently recognizes the importance of the traits of internal sensation seeking. The communication of what is now known and theorized about the creative experience needs to be expressed to beginning students.

Methodology

The objective of this study was to see if awareness of internal sensation-seeking traits would be an influence on creative production. In educational research, operationalization of a research project recognizes the use of self-reporting questionnaires as a valid process of gathering information (Amabile, 1983; Bull & Davis, 1982; Davis & Bull, 1978). By experiencing a self-reporting instrument, one may experience a process of self-reflection that may influence one's production.

Sample

The sample consisted of 207 students in beginning level art, architecture, interior design, and architectural landscape courses. Art and design-related courses have individuals who identify themselves as being creative and are interested in developing their creative potential. These courses offer opportunities in creativity for students with graphic and figural abilility rather than creative individuals in music or writing courses. The beginning level classes were targeted because these students have had less exposure to information about creative processes. The sample was composed of females (58.3%) and males (41.7), aged 18 to 42 with a mean age of 22.03 (see Table I).

Insert Table I About Here

Instruments

The internal sensation-seeking traits of daydreaming, fantasy, imagery, and imagination are measured by the Internal Sensation Seeking Scale (ISS). The ISS Scale was selected because of its concentration on daydreaming, fantasy, imagery, and imagination related questions and not the broader Sensation-Seeking Scales of Zuckerman, Kolin, Price, & Zoob (1964) that is concerned with external as well as internal questions of sensation seeking. The questions concerning imagery and imagination examine the use and vividness of mental images in a variety of situations. The questions concerning daydreaming and fantasy address the degree of vividness and the remembrance of the fantasy and daydreaming activities.

The Hoyt reliabilities for internal sensation seeking of the ISS Scale is .88 for all subjects. The mean score used as a standard for purposes of comparison with the results of this project is 148.16 (Bull, 1978). The ISS Scale includes both positive ("I have an active imagination") and negative ("When I am bored, only doing something makes me feel better"). Scoring is based on summing the five-point Likert-like scale.

The Torrance Test of Creative Thinking, Figural Test A (TTCT) is the instrument selected to operate as a measure of creative production. The TTCT was selected because the test measures a constellation of creative thinking abilities which are "presumed to be brought into play in creative achievements"

(Torrance, 1990b, 1974, p. 1) and uses a figural capacity appropriate for art and design students. The streamlined version of this test incorporates a creativity index. This index uses additional creative traits, some of which are emotional expressiveness, internal visualization, richness and colorfulness of imagery, and fantasy. An additional reason for the use of the TTCT is its wide recognition as an instument measuring creative thinking abilities and its accepted normative standards (Frasier, 1988; Harvey, Hoffmeister, Coates, & White, 1970; Plass, Michael, & Michael, 1974; Torrance, 1990a, 1974; Torrance & Wu, 1981). The figural tests are comprised of three activities designed to tap different aspects of creative functioning. The standard score/creativity index is predominately a composite measure of the students' scores of fluency, originality, elaboration, abstractness of titles, and resistance to closure, plus the impact of the additional elements mentioned above. The average standard score/creativity index is 109.10 (Torrance, 1990a, 1974, p. 22).

Data Collection

The instruments were organized into three groups with varying order of ISS Scale and TTCT. Group 1 received the ISS Scales first and then the TTCT. Group 2 received the TTCT first and then the ISS Scales. This was a quasi-experimental test situation because the third group operated as a control group and did not

take the ISS Scale. This three-group arrangement allows for a comparison of group means to ascertain if taking the ISS Scale operated as an influence on the students' creative production which was measured by the TTCT.

Findings and Discussion

The Pearson Product-Moment Correlation indicates no significant statistical relationship between the variable of creative production indicated by the standard score/creativity index from the Torrance Tests of Creative Thinking, Figural Test A (TTCT) and the score of the Internal Sensation Seeking Scale (ISS) ($r = 0.14939$ $p < .0826$). Direct questions addressing students' self-perception of their daydreaming, fantasy, imagery, and imagination did indicate strong correlation with TTCT, but the correlations did not follow through in corroborating questions as indicated in Table II. The ISS scores ranged from 19 to 173 for Group 1 and from 96 to 175 for Group 2. Group 3 did not take the ISS Scale. An analysis of variance indicates that the order of tests does not have a significant impact on the ISS Scales as indicated in Table III.

The range of scores for the TTCT are 54 to 152 for Group 1, 55 to 151 for Group 2, and 63 to 151 for Group 3. An analysis of variance indicates that the order of tests does not have a significant impact on the TTCT as indicated in Table IV.

The findings expected was for Group 1 to be considered

a higher creative group, with Group 2 and Group 3 having lower scores on the TTCT. This did occur, but not by a significant degree. The mean scores ranged from Group 1's 107.310 to Group 2's 102.385. Group 3, the control group, had a mean score of 106.817. The mean score for Group 1's ISS Scale is 139.282 and for Group 2, the mean score is 139.323.

Summary and Conclusions

The questions on the ISS Scale that are significant at $p < .05$ concern statements dealing most directly with vividness of imagery, imagination, and daydreaming. The objective of this project was to see if awareness of internal sensation-seeking traits would be an influence on creative production in an effort to assist art and design students in the enhancement of their creative production.

As an experiment, the research effort was conducted successfully yielding information on the influences of creative production. The findings contribute to efforts to understand the phenomena of creativity. Support for the hypothesis that greater self-awareness of the internal activities of one's being may enhance creative production was not validated under the test-like conditions offered. Due to the theoretical literature available, one would not conclude that there is not relationship among these variables. Awareness and understanding one's internal activity may benefit creative production in a non-research environment.

There is a great deal of anecdotal information that suggests the importance of bringing one's internal and external environments into harmony. In addition, there is research supporting the theory that creative individuals have highly active traits of imagery and imagination (Barron, 1955; Bull, 1978; Kaha, 1983; Khatena, 1975; MacKinnon, 1970; Rhodes, 1981; Suler, 1980; Schmeidler, 1965). Further, there is a great deal of research and theory regarding the importance of daydreaming and fantasy (Chambers, 1969; Forisha, 1978; Getzels & Csikszentmihaly, 1966; Singer & Schonbar, 1961).

The art and design students who would be expected to display a high degree of internal sensation seeking activity appeared not to acknowledge their internal sensation seeking activity, be aware of this activity, or have the activity. For some students, the ISS Scale scores were very low. Other students, who had very low TTCT scores, displayed very high ISS Scale scores. This finding was supported by a lack of significance between the two tests. Lack of significant correlation among instruments is not an uncommon occurrence in creativity research (Hattie, 1980). What happened in this research project may be that both tests did function in their appropriate manner, but that the levels of creativity that the instruments measured are different.

The Torrance Test of Creative Thinking is an accepted test of creative thinking abilities. The test is considered reliable in measuring fluency, elaboration, originality, and resistance to

closure; traits common to creative individuals. Under reasonable test-like conditions, one can observe that the TTCT is an adequate measure of the traits of creative thinking. There were cases where attitude and effort on the part of the students influenced scores negatively.

The TTCT instrument was selected because of existing norm standards and the incorporation of elements in the scoring process that included fantasy, daydreaming, and emotional influences. There is the reality that the TTCT is a divergent production instrument and may have been inappropriately applied as an instrument to measure creative production. Creativity is considered to operate on several levels, with divergent production operating on the lower levels, but this is the trait on which much of creativity research has been based (Ainsworth & Land, 1982; Brown, 1989; Cawelti, et al 1992). The phenomena of creative production that incorporates daydreaming, fantasy, imagery, and imagination may be of the higher levels of creativity which incorporates more intense levels of emotion and frustation in the incubation process (Cawelti, et al 1992; Torrance & Hall, 1982; Wheeler-Brownlee, 1985). If this were the case, the influence of a scale on creative production would not be an influence in test-like conditions (Koestner, Ryan, Bernieri & Holt, 1984; Torrance, 1968). The process of self-awareness could still be an influencing factor on students' creative production. But the implications from this

study are that time, discussion, and reflection need to be part of the experimental conditions (Ghiselin, 1952).

Torrance acknowledges the many variables that aid or hinder actual creative production, such as technical training, physical well being, environmental concerns, attitude, and motivation toward being creative (Torrance, 1972c, 1988). As an indicator of creative traits, the TTCT is adequately reliable and valid (Frasier, 1988; Kimball, 1987; Torrance, 1972b, 1981, 1990a; Torrance & Wu, 1981). Did a creative process occur that would be influenced by increased awareness of the traits of internal sensation seeking identified as daydreaming, fantasy, imagery, and imagination? After review of the influences on the creative process, one may question the extent of creative exertion in an experimental situation. In addition to the difficulties of the testing environment on creative production, one may question if there was time and energy expended in adequate amounts by students to be influenced by increased awareness of their internal sensation seeking traits. The results do not support that there was an influence. Is there importance in assisting students in becoming more aware of their internal traits? Research and theory supports the hypothesis that internal awareness and expression are helpful in the development of one's creative potential.

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TABLE I

CHARACTERISTICS OF THE SAMPLE

Characteristic	Frequency	Percent
Age*:		
>22	136	76.0
22 and over	43	24.0
Education:		
Freshman and sophomore	121	59.0
Junior and above	84	41.0

n=207

*Age criteria is delineated according to break between lower and upper college levels. T-tests indicated no significant differences regarding age categories for ISS Scale or TTCT.

TABLE II

INTERNAL SENSATION SEEKING SCALE
QUESTIONS CORRELATED WITH
STANDARD SCORE/CREATIVITY INDEX

ISS QUESTIONS	r	p
1. When I am shown an object, I can usually visualize where it might be used and the things which would be around it.	0.1725	0.0445
2. I like to work on things which require me to create mental images.	0.3492	0.0001
3. I often enjoy daydreaming about future projects, activities, or problems.	0.2699	0.0015
4. When I read a particularly good story, the characters seem real to me	0.0692	0.4254
5. I like to visualize new things before I try to make them.	0.2191	0.0107
6. When I listen to a story on the radio, I find it hard to visualize the scene which the actors are trying to create.*	0.0757	0.3827
7. I engage in some form of daydreaming every day.	-0.0090	0.9175
8. Sometimes I like to let myself go in fantasy before I fall asleep.	0.1252	0.1478
9. I have an active imagination.	0.2881	0.0007
10. I get some of my best ideas by day-dreaming rather than relying on books, well-established authorities, or other people.	0.2139	0.0127

11. I find it more enjoyable to work at routine things than to think about what might happen in the future.*	0.0600	0.4894
12. When I read a book, I create additional mental images which the author has not described but which are related to the story.	0.0722	0.4056
13. When I am asked to create something that is new and different, I first like to create a mental blueprint or plan for it.	0.0877	0.3136
14. When I read a good story, I find it hard to mentally visualize how the people look.*	0.0914	0.2919
15. I would rather perform physical activities than think about things.*	0.0739	0.3940
16. When I close my eyes and think about something I can see it in color.	0.1872	0.0297
17. When I see a painting I find it hard to visualize what the artist saw when he painted the scene.*	0.1589	0.0657
18. I find it hard to visualize the flow of ideas in a paper or story that I am going to write.*	0.1116	0.1974
19. The imaginary stories I create in my mind seem to be replays of ones I have thought up before.*	0.0290	0.7391
20. I like to create ideas and think about them.	0.3203	0.0002
21. I find it exciting to think about how I will make something and how it will look.	0.2852	0.0008
23. I can spend hours sitting quietly thinking about a new idea or an image of something which I will bring forth in the future.	0.1618	0.0608
24. I have a hard time visualizing things that I have seen.*	0.0200	0.8173

25. My daydreams are always interesting because they are new and different.	-0.0017	0.9847
26. I do not enjoy daydreaming.*	0.1569	0.0690
27. I like to think of ways to embellish tales which have been told to me.	0.2359	0.0063
28. When I am going to make something new and different, I can see it clearly in my mind before I begin.	0.3407	0.0001
29. When I review things that have happened to me during the day, I can picture each of them in my mind.	-0.0034	0.9686
30. When I look at a picture of any scene, I I can close my eyes and visualize ways that it could be made better.	0.0831	0.3417
31. Sometimes I dream of things which I later make or do.	0.1563	0.0712
32. I like to create fantasies in my mind.	0.0503	0.5639
33. After I have seen a movie or play, I can close my eyes and vividly see what happened in the best parts.	0.1319	0.1316
34. I have vivid daydreams/dreams with strange colors and sounds.	-0.0033	0.9697
35. Sometimes I dream of things which lead me to new insights and discoveries.	0.0545	0.5318
36. I have experienced moments of inspiration and creativity when artistic expression, ideas, or the solution to problems that I have struggled with came to me with a special intensity and clarity.	0.2379	0.0058

*Negatively scored.

TABLE III

ANALYSIS OF VARIANCE OF GROUP PERFORMANCE ON INTERNAL SENSATION SEEKING SCALES

	DF	Sum of Squares	Mean Squares	F	P
ISS	1	0.06	0.06	0.00	0.99
Error	134	46306.58	345.57		
Total	135	46306.64			

Means: Group 1: 139.282
Group 2: 139.323
Group 3: -------

TABLE IV

ANALYSIS OF VARIANCE OF GROUP PERFORMANCE ON THE TORRANCE TEST OF CREATIVE THINKING, FIGURAL TEST A

	DF	Sum of Squares	Mean Square	F	P
TTCT	2	984.73	492.36	1.14	0.32
Error	204	87837.19	430.57		
Total	206	88821.91			

Means: Group 1: 107.310
Group 2: 102.385
Group 3: 106.817

CHAPTER V

SUMMARY

The purpose of this study was to investigate the influence of internal sensation-seeking traits on creative production. Internal sensation-seeking traits are defined as daydreaming, fantasy, imagery, and imagination. Creative production is defined as the creativity index/standard score on the Torrance Tests of Creative Thinking, Figural Test A (Torrance, 1990).

Specifically, the hypothesis for this investigation is that there would be an increase in student's creativity index/standard scores if they became more aware of their traits of daydreaming, fantasy, imagery, and imagination. These traits are commonly recognized as possible influences on creative production. The traits were measured by self-reported answers on the Internal Sensation-Seeking Scale (ISS) (Bull, 1978).

The methodology for this research project involved the administering of three, differently organized packets. The first packet contained the ISS Scale and then the figural test. The second packet contained the figural test and then the ISS Scale. The third packet acted as a control sample and contained no ISS Scale, but did include written instructions to "Be Creative". Demographics questions were part of all three packets.

The homogeneous sample is composed of university level beginning art and design students from the fine arts, architecture, interior design, and landscape architecture departments at Oklahoma State University, Oklahoma Christian, and the University of Central Oklahoma (See Appendix B, page 86). The sample is considered a traited-sample. Age, birth location, department, or gender are not designed to be critical variables of this study. The issue of beginning creative exploration is considered to be the critical characteristic of this study. The concept of beginning creative exploration would indicate the beginning of making demands on internal sensation-seeking traits.

The statistical findings indicate no significant differences among the scores for the ISS Scales or the creativity index/standard score by the three groups receiving the differently arranged packets ($r = 0.14939$ $p < .0826$). The mean score for the ISS Scale is 139.30 with a standard deviation of 18.5 and a range of 67 to 173. The mean score for the creativity index/standard score of the Torrance test is 105.51 with a standard deviation of 20.76 and a range of 63 to 151.

A review of anecdotal and research literature strongly relates the importance of daydreaming, fantasy, imagery, and imagination and the possible impact these traits may have on creative production. The lack of correlation between the ISS Scale and the creativity index/standard score of the Torrance Test of Creative Thinking presents a dilemma to be explored. One can observe the test scores in Table II and discern that the direct questions relating to daydreaming, fantasy, imagery, and imagination do indicate a correlation with the creativity index/standard scores of the Torrance Test of Creative Thinking.

When the questions are altered, the indication of correlation diminishes. This drop in student scores may be a factor of self-identity, self-awareness, or self- acceptance. Also, there is a recognized research issue of self-reporting as a reliable measure (Babbie, 1986).

Inherent in the design of this research project are several issues that could be reevaluated in future investigations. One issue to be reconsidered is the presentation of the material. There was a visual inequality between the type written ISS Scale and the Torrance Test of Creative Thinking. The students may have sensed that the ISS Scale was more test-like, whereas, the Torrance Test of Creative Thinking is presented in a two-color, printed booklet incorporating graphic images.

A second issue is the problem of school fatigue. The bulk of the tests were administered at the end of the semester and several students appeared fatigued, but voluntarily took the scale and test anyway. Torrance (1990, 1974) discusses that the first figure of his test can be considered an adaption device. This allowance for task adaptation did appear to occur. Students appeared more engaged as they progressed in the figural exercises. Also, some students appeared to enjoy the testing experience and expressed interest in the results.

The third issue concerns the grading of the Torrance Tests of Creative Thinking. Intra-rater reliability was addressed by reevaluation of early tests and periodic reviews to maintain consistency of grading. Inter-rater reliability for the Torrance Tests of Creative Thinking has a history of producing comparable rescoring results.

The fourth issue concerns intrinsic motivation. High or low motivation by subjects in a research testing environment is a common dilemma of research. Motivation in creativity research is especially problematic (Brown, 1989; Torrance, 1988). In addition, intrinsic motivation is an acknowledged variable of creative production (Amabile 1983). For purposes of research design, an assignment of creative product would still present flawed results because of the arbitrary nature of the assignment. For creativity to occur, the traits of the personality, the time allowed for the creative process, and the environment to enhance the creative press or situation all contribute to the creative product (Cawelti, et al, 1990). Further, by definition of creative expression, external evaluation is an arbitrary element influencing the psychological security of the creative student. Therefore, research methodology must consider inherent difficulties in measuring creativity. Personality traits have a history of being able to be measured. But life influences, capability, and inherent interest play a factor in the creative development of students in art and design-related fields of study.

This study has attempted to explore possible avenues that may assist the students develop their creative abilities. Though no strong statistical relationship resulted by the students experiencing a different order of taking the scales and tests, other research reports and anecdotal information suggests that the traits of daydreaming, fantasy, imagery, and imagination can make positive contribution to an individuals's creative production and self-awareness of these traits may enhance the development of student's creative ability.

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APPENDIXES

APPENDIX A

FIGURES

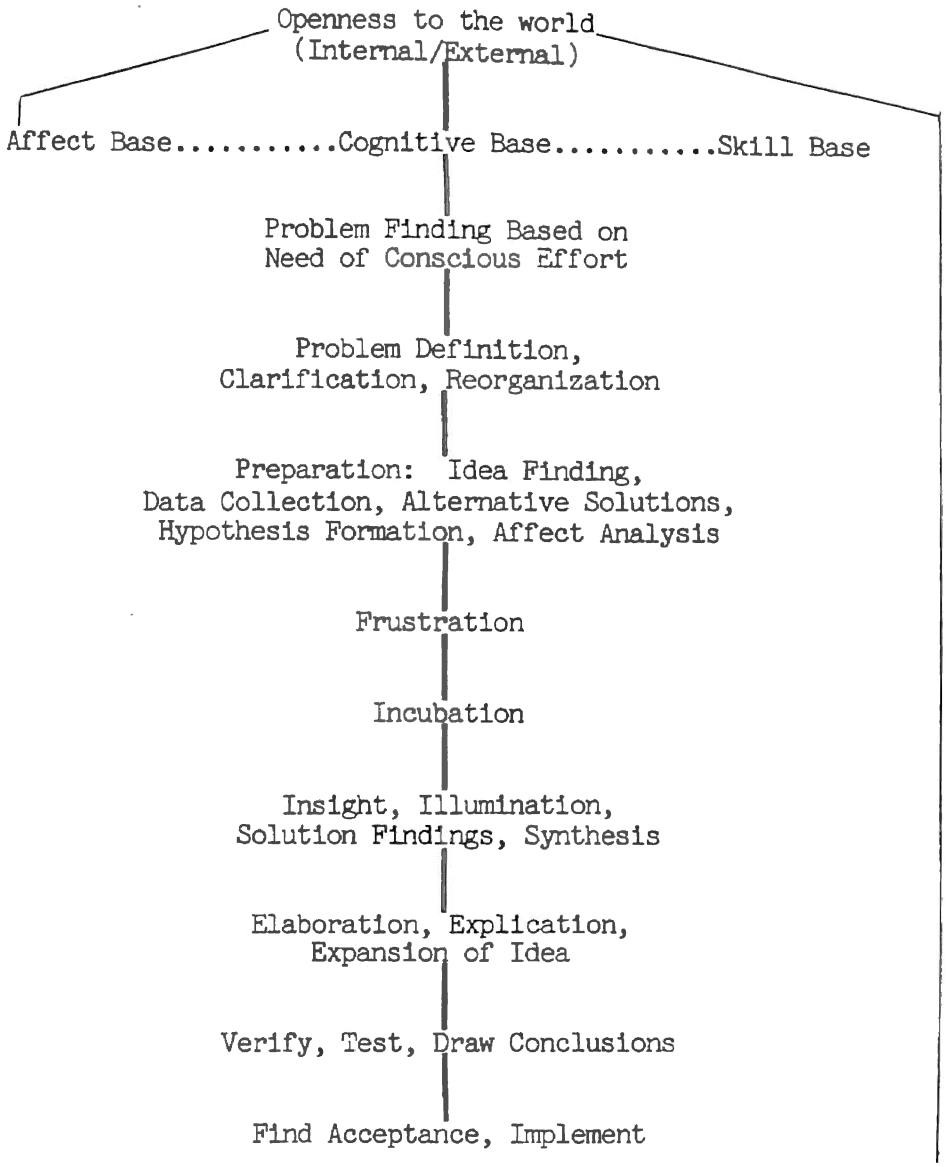


Figure 1. Generic Creative Process Model, Part One

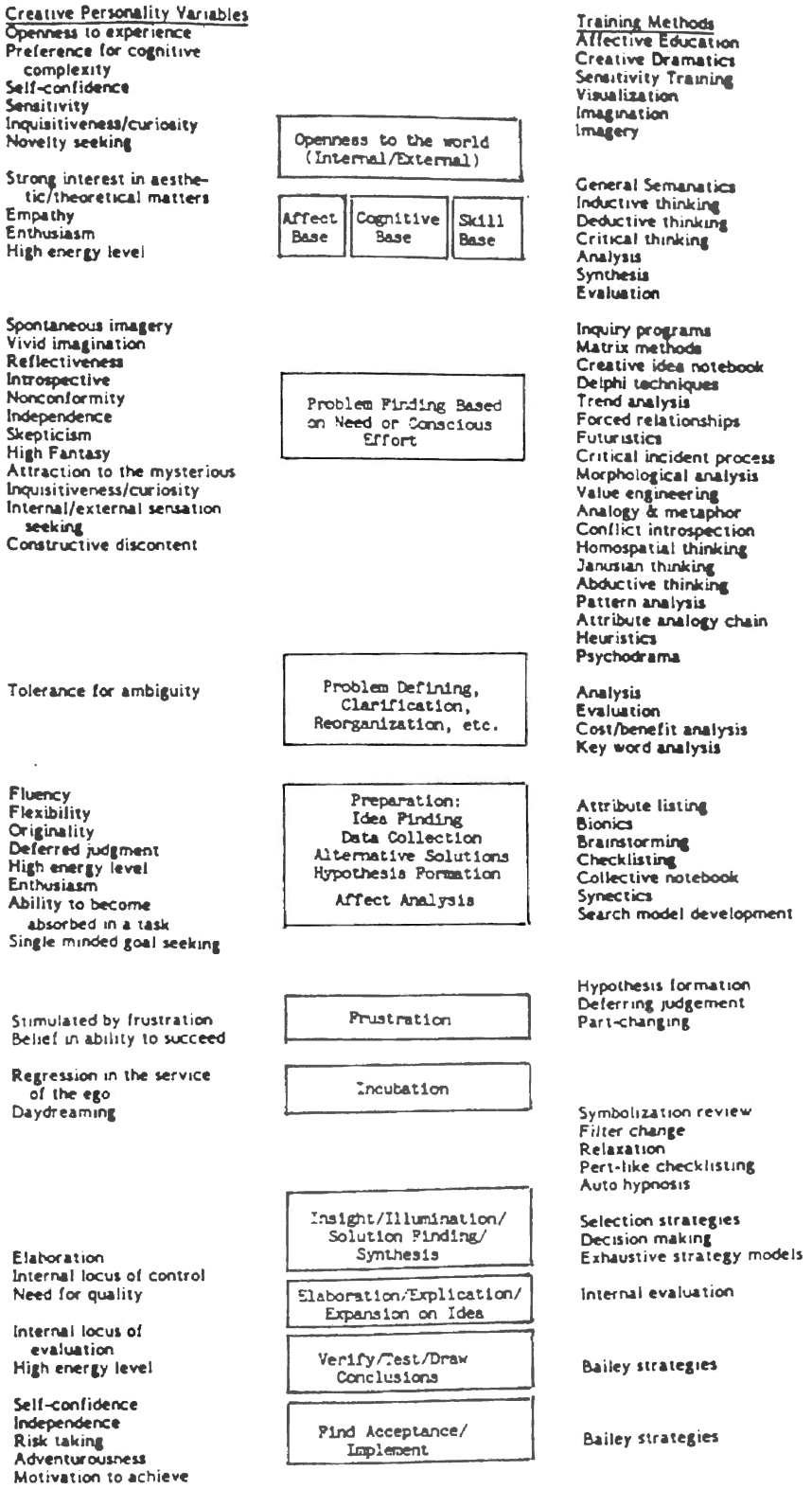


Figure 1. Generic Creative Process Model, Part Two

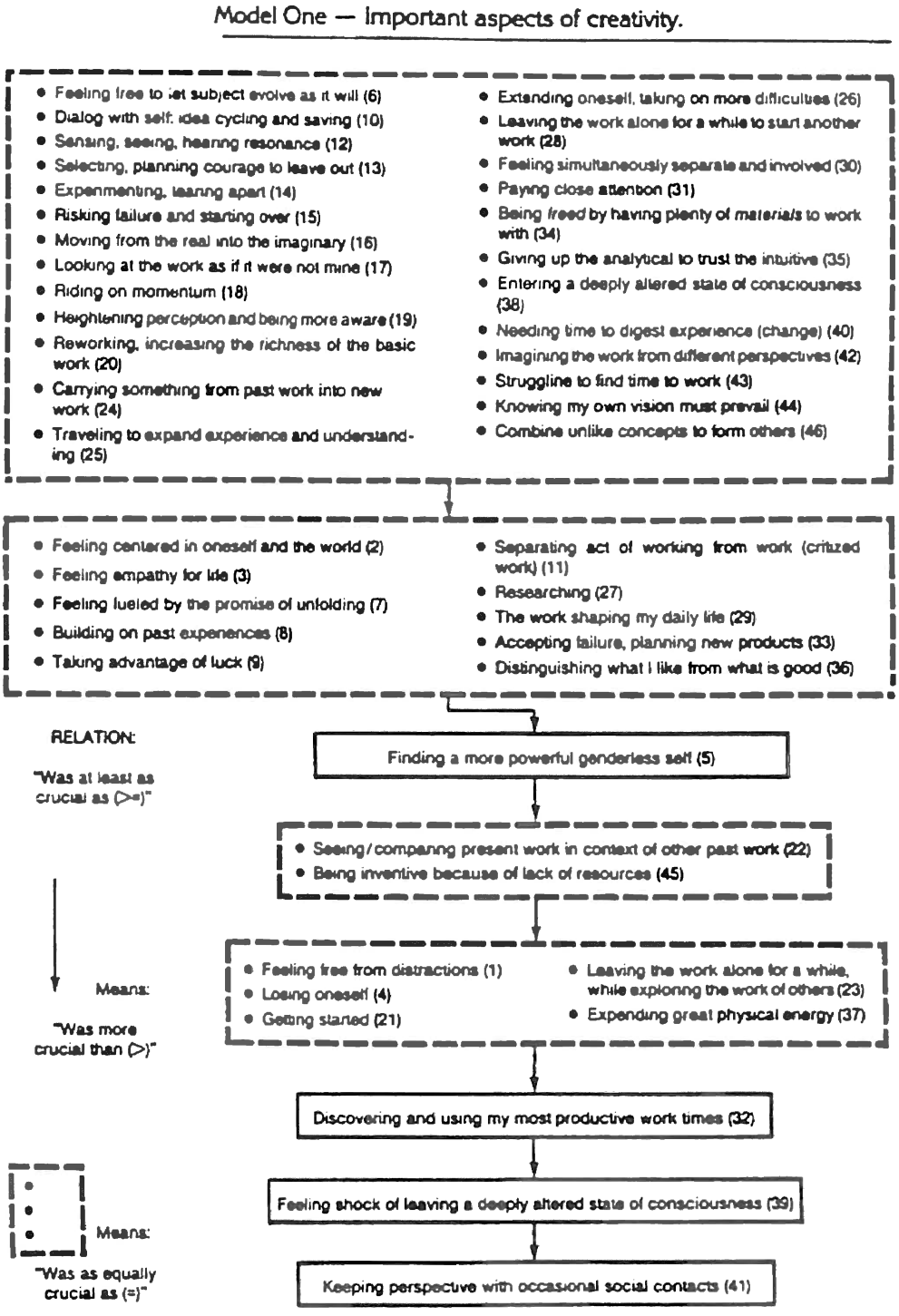


Figure 2. Model of Artistic Creativity, Part One

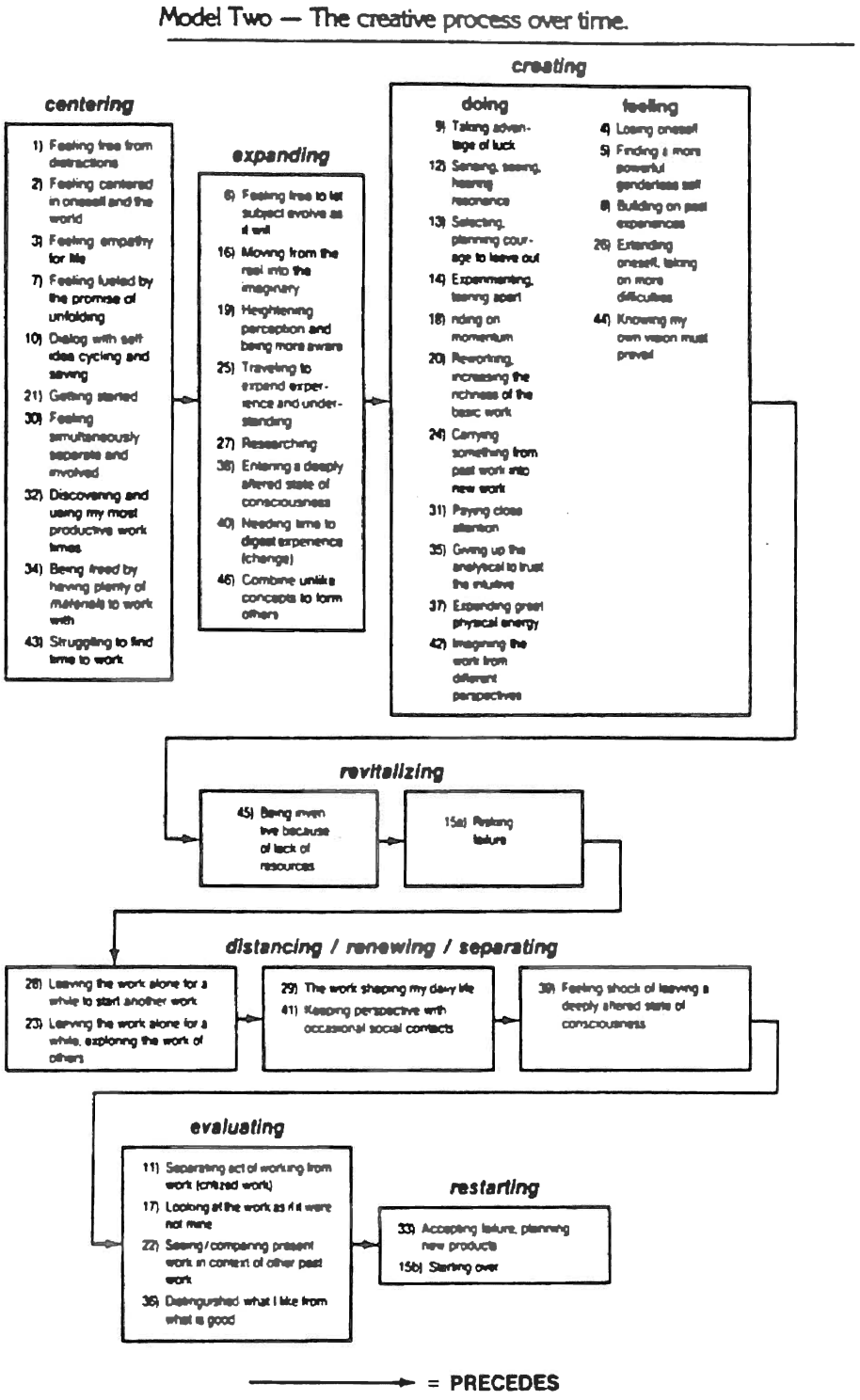


Figure 2. Model of Artistic Creativity, Part Two

Model Three — A multi-dimensional view of the creative process: time, space, observatility, and consciousness.

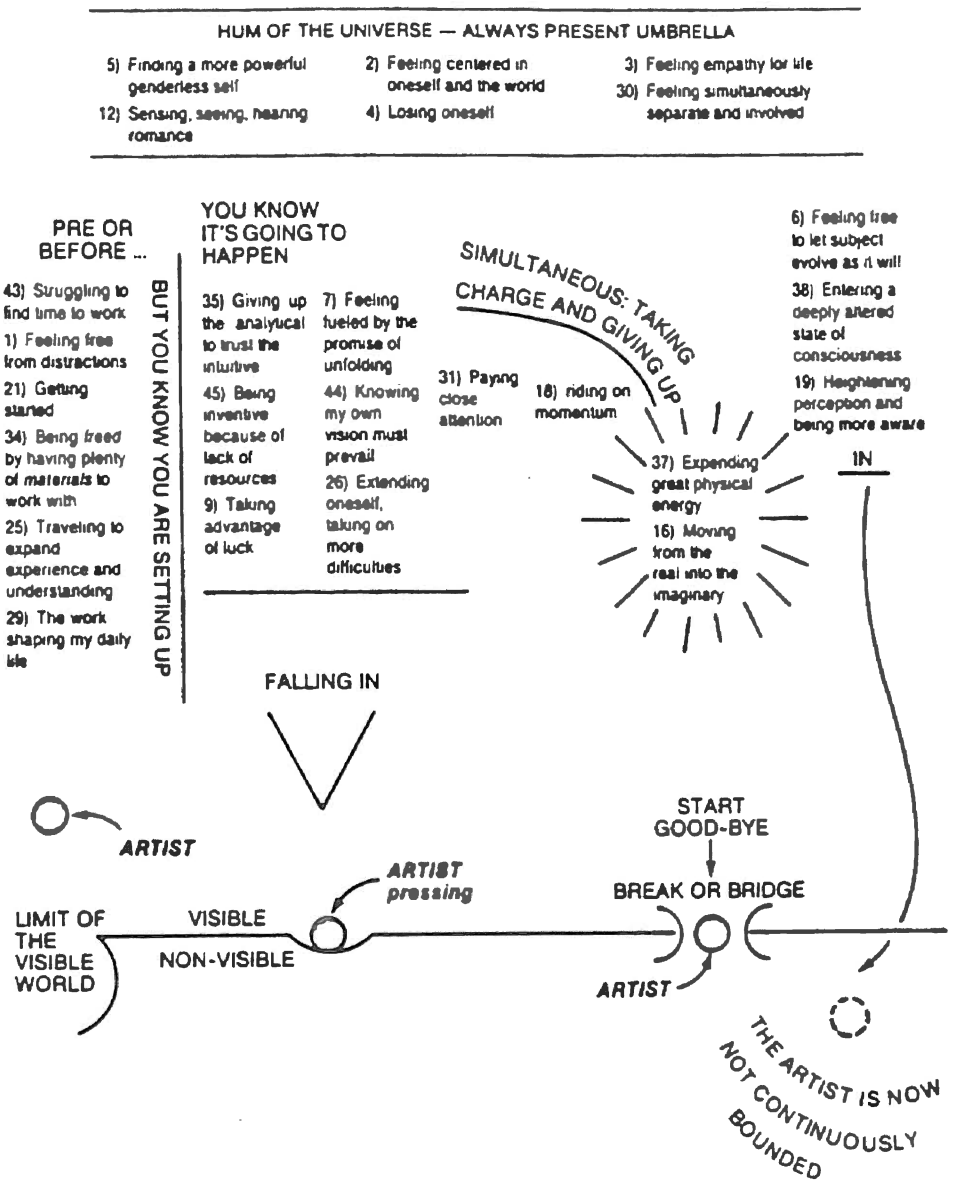


Figure 2. Model of Artistic Creativity, Part Three

(Continued) Model Three — A multi-dimensional view of the creative process: time, space, observatility, and consciousness.

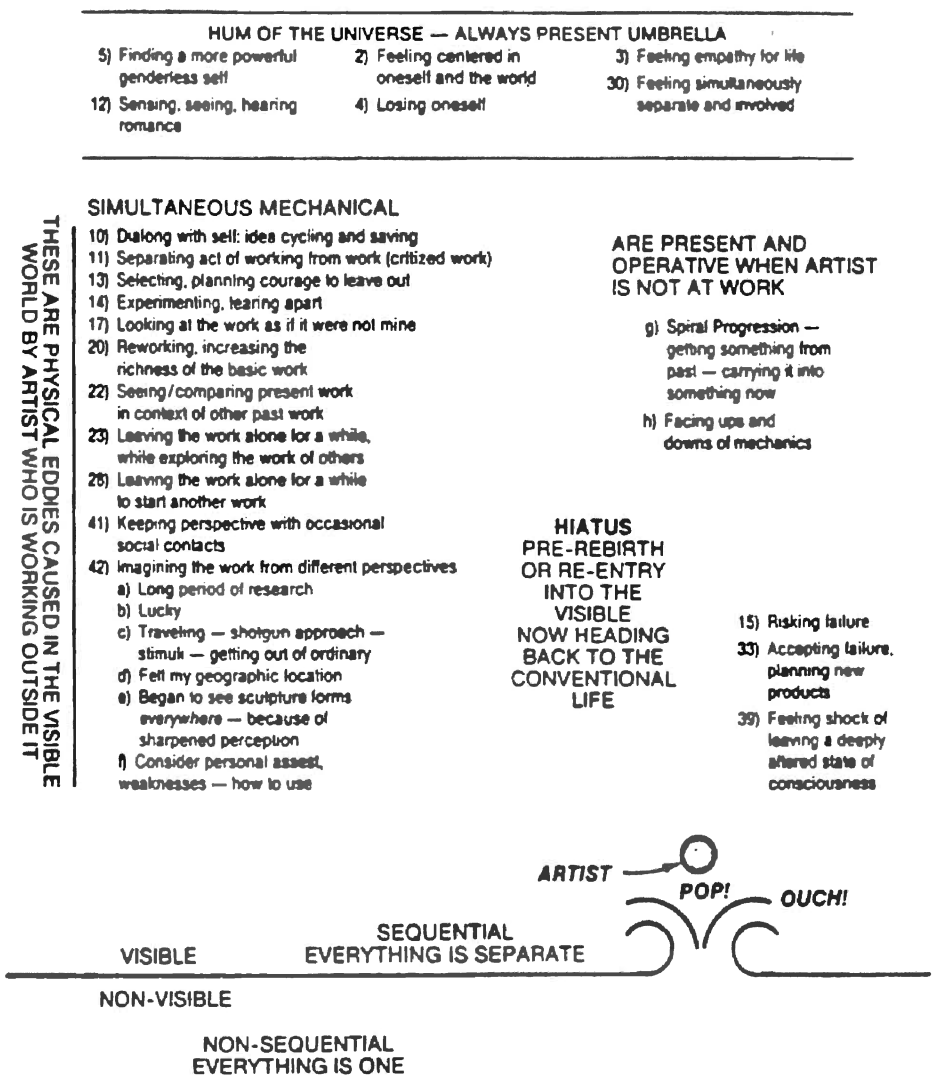


Figure 2. Model of Artistic Creativity, Part Four

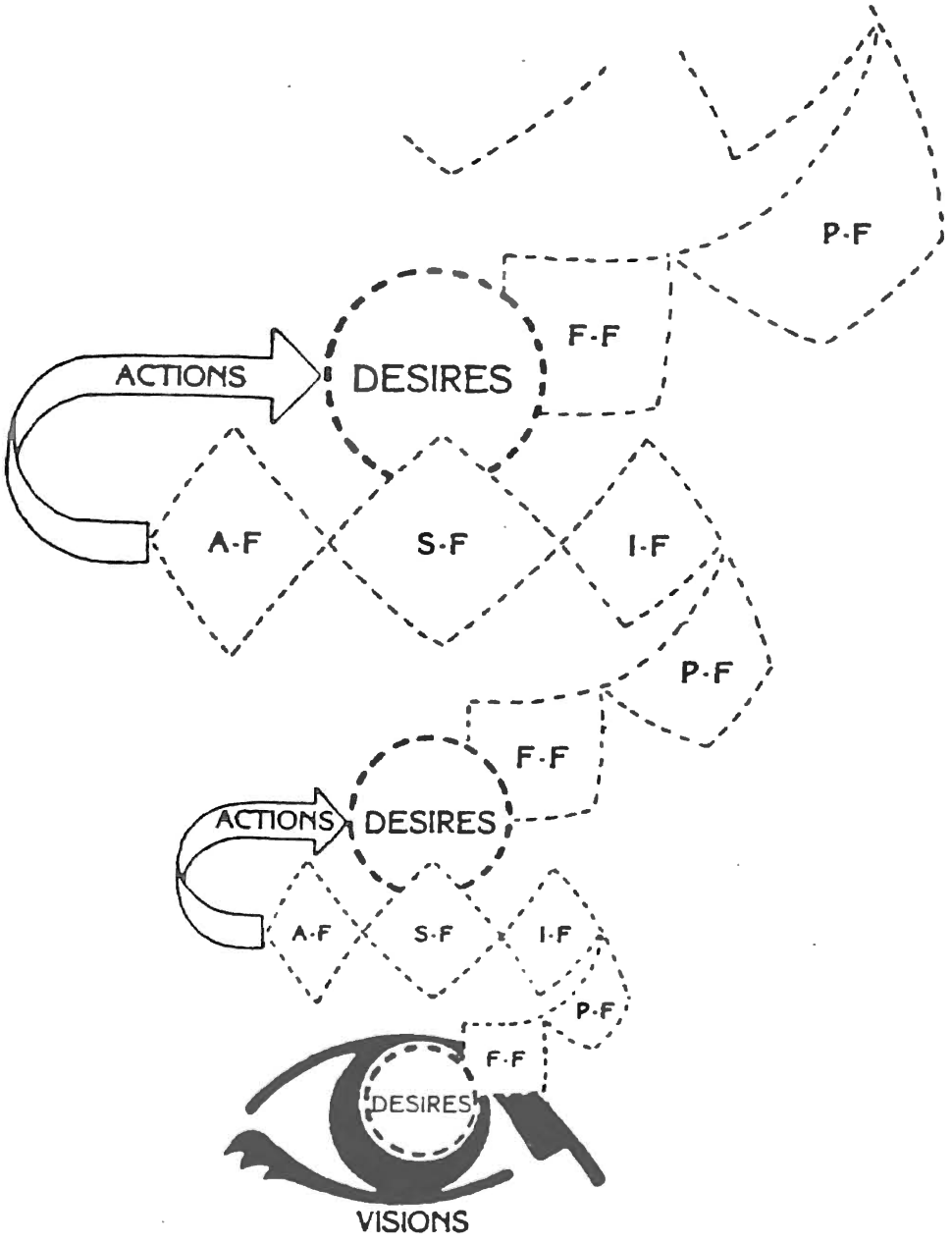
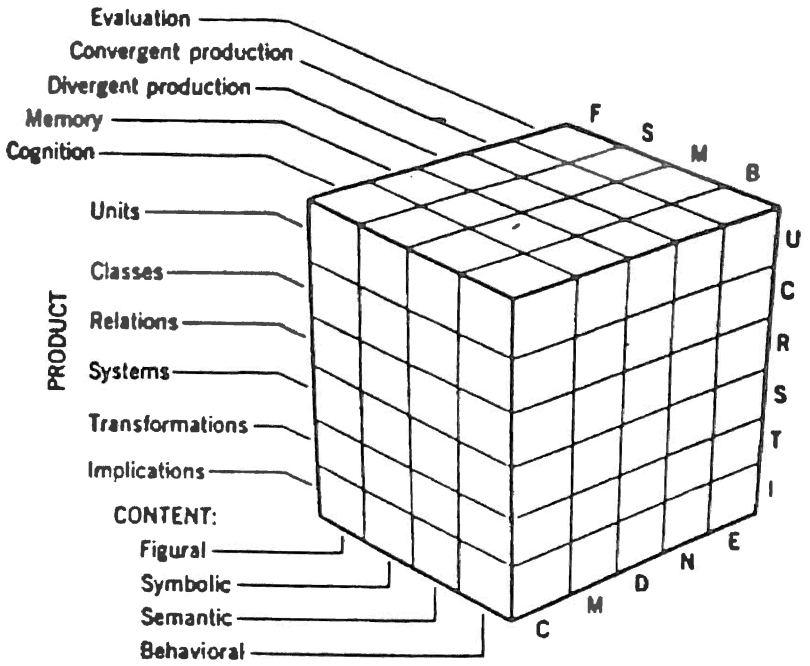


Figure 3. Visioneering Model of Creative Experience

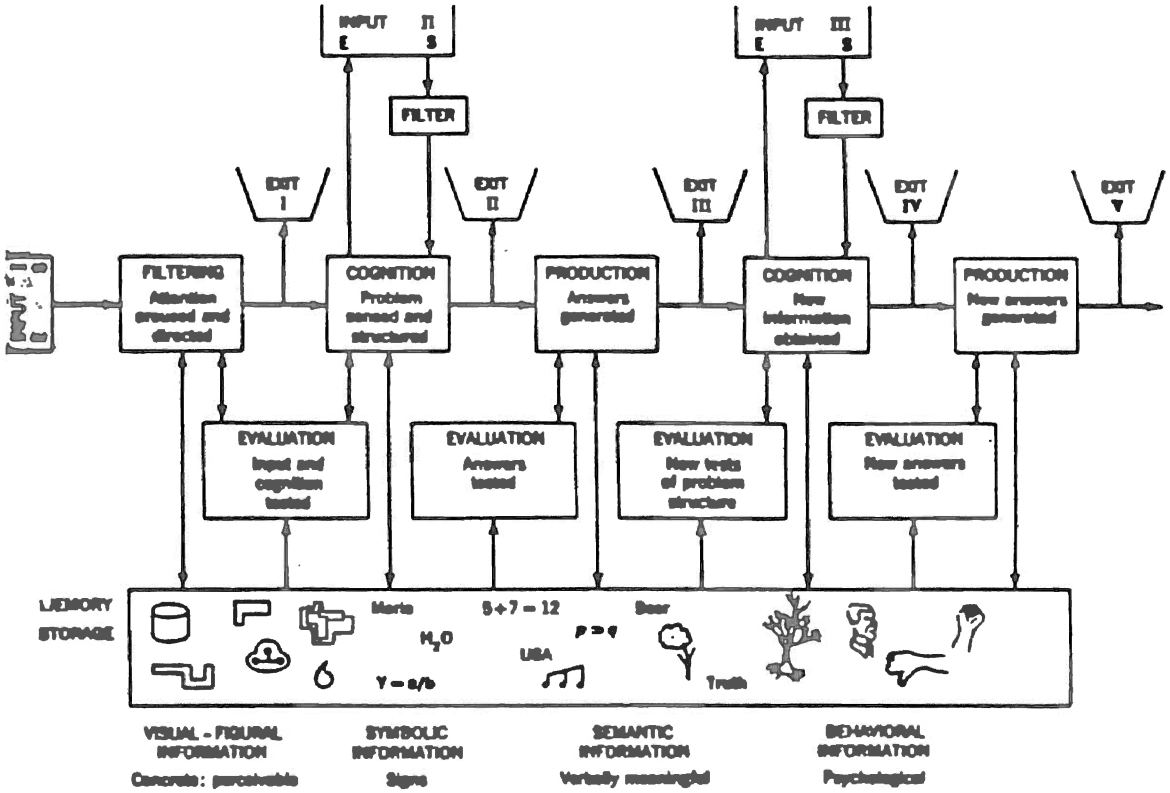


Guilford's "Structure of Intellect" model of intelligence. From *The Nature of Human Intelligence* by J. P. Guilford, 1967. New York: McGraw-Hill Book Co. Copyright 1967 by McGraw-Hill. Reprinted by permission.

Operations	Contents	Products
Major intellectual processes; different ways in which humans deal with information	Types of information with which humans deal	Types of outcome of information processing
Cognition (C). Discovery or recognition of different forms of information; comprehension	Figural (F). Concrete visual, auditory, or other sensory forms	Units (U). Mutually exclusive items of information; "things"
Memory (M). Storage and potential availability of information in its original form	Symbolic (S). Denotative signs (letters, numbers, words, etc.) without consideration of meaning or form	Classes (C). Groupings of sets of items based on their common properties
Divergent production (D). Generation of variety and amount of information, based on given information; most involved in creative potential	Semantic (M). Meaning of words and occasionally pictures; important in verbal thinking and communication	Relations (R). Connections between items based on variables applying to them (e.g., relative size.)
Convergent production (N). Generation of conventionally accepted single best answer to a given problem	Behavioral (B). Nonverbals involved in human interactions, particularly concerning such things as moods, desires, and intentions	Systems (S). Organized, interrelating, or interacting groups of items or parts
Evaluation (E). Making judgments concerning extent to which a particular piece of information meets given criterion (adequacy, suitability, etc.)		Transformations (T). Various types of changes in existing information
		Implications (I). Extrapolations or elaborations of information in terms of, e.g., consequences or expectancies

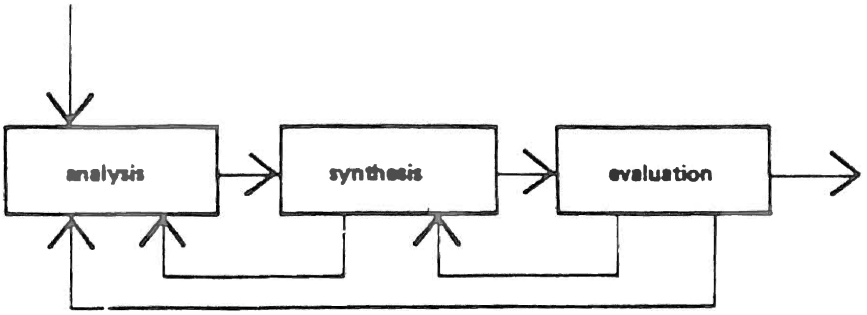
*Based on and condensed from Michael (1977).

Figure 4. Guilford's Structure of the Intellect, Part One



Guilford's "Structure of Intellect Problem-Solving (SIPS) Model." From *The Nature of Human Intelligence* by J. P. Guilford, 1967, New York: McGraw-Hill Book Co. Copyright 1967 by McGraw-Hill. Reprinted by permission.

Figure 4. Guilford's Structure of the Intellect, Part Two Problem-Solving (SIPS) Model



Even the simplest map of the design process must allow for a return loop to all preceding functions

Figure 5. Lawson's Design Process Model

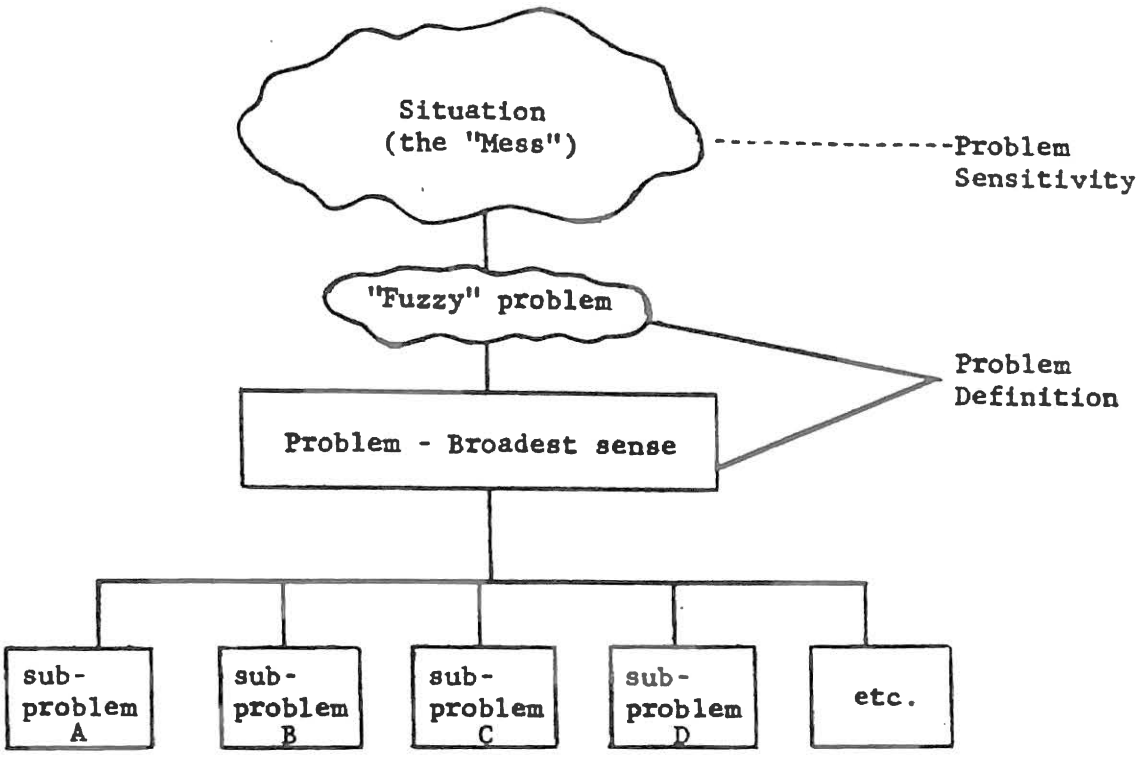


Figure 6. Parnes' Problem Recognition Model

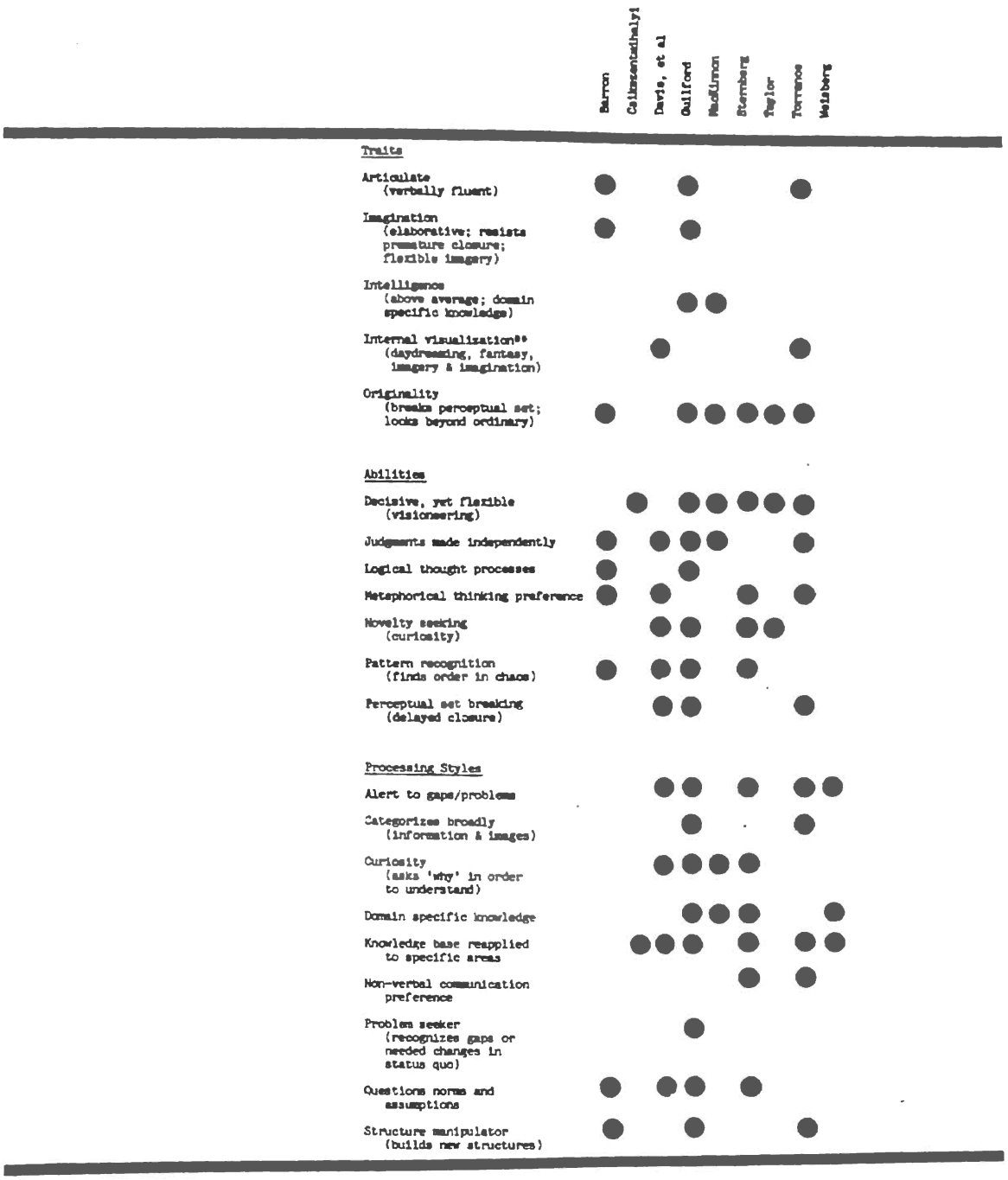


Figure 7. Cognitive Characteristics of Creative Persons Based on Tardif & Sternberg's (1988) Matrix

APPENDIX B

TABLES AND INSTRUMENTS

TABLE V

SUMMARY CHARACTERISTICS OF SAMPLE

Characteristic	% -	N
Age:		
22 years and under	60.00	136
Over 22 years	21.00	43
Education:		
Freshman/Soph	58.00	121
Junior/Above	41.00	84
Gender:		
Female	58.00	120
Male	42.00	86
Location:		
(1) Urban	34.00	71
(2) Suburban	25.00	51
(3) Rural	34.00	71
(4) Mix	00.04	9
Major:		
(1) Architecture	24.00	49
(2) Art	17.00	36
(3) Interior Design	23.00	47
(4) Landscape Arch	10.00	21

TABLE VI

STATISTICAL DIFFERENCES REGARDING CHARACTERISTICS OF SAMPLE FOR THE INTERNAL SENSATION SEEKING SCALE

Characteristic	N	Mean	SD	Range
Age:				
22 years and under	90	139.68	20.54	19 - 175
Over 22 years	27	135.93	15.46	96 - 160
Education:				
Freshman/Soph	77	139.06	20.15	19 - 175
Junior/Above	58	139.74	16.43	67 - 173
Gender:				
Female	79	138.48	16.42	67 - 173
Male	57	140.44	21.19	19 - 175

TABLE VII

STATISTICAL DIFFERENCES REGARDING CHARACTERISTICS OF SAMPLE FOR THE TORRANCE TEST OF CREATIVE THINKING, FIGURAL TEST A

Characteristic	N	Mean	SD	Range
Age:				
22 years and under	136	105.72	21.04	54 - 151
Over 22 years	43	105.33	21.94	63 - 152
Education:				
Freshman/Soph	121	104.57	19.39	54 - 151
Junior/Above	84	106.87	22.77	58 - 152
Gender:				
Female	120	105.21	20.36	58 - 152
Male	86	106.24	21.51	54 - 151

TABLE VIII

SAMPLE CHARACTERISTIC OF AGE COMPARING
SUBJECTS ABOVE 22 YEARS
OR BELOW 22 YEARS

Instrument	DF	t	P
Internal Sensation Seeking Scale	115.0	0.3826	0.1010
Torrance Test of Creative Thinking, Figural Test A	177.0	0.9155	0.7029

TABLE IX

SAMPLE CHARACTERISTIC OF EDUCATION COMPARING FRESHMAN AND SOPHOMORE GRADES TO JUNIOR AND ABOVE GRADES

Instrument	DF	t	P
Internal Sensation Seeking Scale	133.0	0.8350	0.1084
Torrance Test of Creative Thinking, Figural Test A	203.0	0.4381	0.4381

TABLE X

SAMPLE CHARACTERISTICS OF GENDER
COMPARING FEMALE AND
MALE SUBJECTS

Instrument	DF	t	P
Internal Sensation Seeking Scale	134.0	0.5450	0.0372
Torrance Test of Creative Thinking, Figural Test A	204.0	0.7255	0.5755

TABLE XI

ANALYSIS OF VARIANCE OF GROUP PERFORMANCE
ACCORDING TO THE VARIABLE OF LOCATION
IN RELATION TO THE INTERNAL
SENSATION SEEKING SCALE

	DF	Sum of Squares	Mean Squares	F	P > F
ISS Model	3	1749.60	583.20	1.71	0.1672
Error	130	44224.23	340.19		
Total	133	45973.83			

Means:	Group 1	Urban:	142.82	n = 49
	Group 2	Suburban:	135.15	n = 34
	Group 3	Rural:	139.45	n = 47
	Group 4	Mix:	127.50	n = 04

TABLE XII

ANALYSIS OF VARIANCE OF GROUP PERFORMANCE ACCORDING TO THE VARIABLE OF LOCATION IN RELATION TO THE TORRANCE TEST OF CREATIVE THINKING, FIGURAL TEST A

	DF	Sum of Squares	Mean Squares	F	P > F
TICT Model	3	609.51	203.17	0.47	0.7046
Error	198	85857.60	433.62		
Total	201	86467.11			

Means:	Group 1	Urban:	103.96	n = 71
	Group 2	Suburban:	105.71	n = 51
	Group 3	Rural:	105.27	n = 71
	Group 4	Mix:	112.56	n = 09

TABLE XIII

ANALYSIS OF VARIANCE OF GROUP PERFORMANCE
ACCORDING TO THE VARIABLE OF MAJOR
IN RELATION TO THE INTERNAL
SENSATION SEEKING SCALE

	DF	SUM OF SQUARES	MEAN SQUARES	F	P > F
ISS Model	3	1228.23	409.41	1.18	0.3228
Error	94	32701.82	347.89		
Total	97	33930.05			

Means:	Group 1	Architectural:	138.42	n = 31
	Group 2	Art:	145.57	n = 23
	Group 3	Interior Design:	142.61	n = 28
	Group 4	Landscape Architecture:	135.56	n = 16

TABLE XIV

ANALYSIS OF VARIANCE OF GROUP PERFORMANCE ACCORDING TO THE VARIABLE OF MAJOR IN RELATION TO THE TORRANCE TEST OF CREATIVE THINKING, FIGURAL TEST A

	DF	Sum of Squares	Mean Squares	F	P > F
TTCT Model	3	3261.39	1087.13	2.77	0.0438
Error	149	58516.86	392.73		
Total	152	61778.25			

Means:	Group 1	Architecture:	106.45	n = 49	(A)(B)
	Group 2	Art:	114.06	n = 36	(A)
	Group 3	Interior Design:	103.47	n = 47	(B)
	Group 4	Landscape Architecture:	100.43	n = 21	(B)

INTRUMENT 1

DEMOGRAPHICS

School_____

THIS PACKET CONSISTS OF CREATIVITY SCALES THAT WILL COMPARE CREATIVE TRAITS WITH CREATIVE PRODUCTION ON A FIGURAL EXERCISE.

THANK YOU FOR VOLUNTEERING TO ASSIST IN THIS RESEARCH PROJECT. YOUR EFFORTS WILL BENEFIT EDUCATORS' UNDERSTANDING OF HOW TO ENHANCE CREATIVE DEVELOPMENT IN STUDENTS. THIS RESEARCH IS CONFIDENTIAL.

1. List the last 4 numbers of your social security number __ __ __ __

2. Check gender: FEMALE ___ MALE ___ 3. Age _____

4. Place a checkmark by your educational level:

(a)_____ freshman (0 - 30 hours) (b)_____ sophomore (31 - 60 hours)
(c)_____ junior (61 - 90 hours) (d)_____ senior (91 - 120 hours)
(e) other (specify)_____

5. Circle your racial identification:

(a) Asian (b) Black (c) Hispanic (d) American Indian (e) White (f) Other

6. Where did you live during the majority of your childhood?

(a) ___Primarily in an urban area (population greater than 50,000)
(b) ___Primarily in a suburban area (community outside of, but adjoining, a city of 50,000 or more)
(c) ___Primarily in a rural area (population less than 50,000)
(d) ___A mix of the above with less than 50% of the time in any one area

7. Circle the item that best describes the occupation your father:

a. professional/technical	j. manager/administrator
b. salesworker	k. clerical worker
c. crafts worker	l. machine operator
d. laborer	m. farmer/farm manager
e. farm foreman/laborer	n. service worker
f. private household worker	o. government or military worker
g. retired	p. student
h. homemaker	q. disabled
i. not gainfully employed	r. other _____

8. Circle the item that best describes the occupation your mother:

a. professional/technical	j. manager/administrator
b. salesworker	k. clerical worker
c. crafts worker	l. machine operator
d. laborer	m. farmer/farm manager
e. farm foreman/laborer	n. service worker
f. private household worker	o. government or military worker
g. retired	p. student
h. homemaker	q. disabled
i. not gainfully employed	r. other _____

9. Place a checkmark by the item that describes when you born into your family:

(a)___first born (b)___second born (c)___third born
(d)___ fourth born or later (e)___ other: please explain_____

10. Identify your major: (a)___architecture (b)___art

(c)___interior design (d)___landscape architecture

INSTRUMENT 2

INTERNAL SENSATION SEEKING SCALE

CIRCLE HOW STRONGLY YOU AGREE OR DISAGREE WITH THE STATEMENTS BELOW BY MARKING THE FOLLOWING SCALES:

SD Strongly disagree
D Disagree
N Neutral
A Agree
SA Strongly agree

1. When I am shown an object I can usually visualize where it might be used and the things which would be around it.....SD D N A SA

2. I like to work on things which require me to create mental images.....SD D N A SA

3. I often enjoy daydreaming about future projects, activities, or problems.....SD D N A SA

4. When I read a particularly good story the characters seem real to me.....SD D N A SA

5. I like to visualize new things before I try to make them..SD D N A SA

6. When I listen to a story on the radio I find it hard to visualize the scene which the actors are trying to create.....SD D N A SA

7. I engage in some form of daydreaming every day.....SD D N A SA

8. Sometimes I like to let myself go in fantasy before I fall asleep.....SD D N A SA

9. I have an active imagination.....SD D N A SA

10. I get some of my best ideas by daydreaming rather than relying on books, well-established authorities, or other people...SD D N A SA

11. I find it more enjoyable to work at routine things than to think about what might happen in the future.....SD D N A SA

12. When I read a book I create additional mental images which the author has not described but which are related to the story.....SD D N A SA

13. When I am asked to create something that is new and different I first like to create a mental blueprint or plan for it..SD D N A SA

14. When I read a good story I find it hard to mentally visualize how the people look.....SD D N A SA

15. I would rather perform physical activities than think about things.....SD D N A SA

16. When I close my eyes and think about something I can see it in color.....SD D N A SA

17. When I see a painting I find it hard to visualize what the artist saw when he painted the scene.....SD D N A SA

18. I find it hard to visualize the flow of ideas in a paper or story that I am going to write.....SD D N A SA

19. The imaginary stories I create in my mind seem to be replays of ones I have thought up before.....SD D N A SA

20. I like to create ideas and think about them.....SD D N A SA

21. I find it exciting to think about how I will make something and how it will look.....SD D N A SA

22. When I create a fantasy it is usually new to me.....SD D N A SA

23. I can spend hours sitting quietly thinking about a new idea or an image of something which I will bring forth in the future.SD D N A SA

24. I have a hard time visualizing things that I have seen....SD D N A SA

25. My daydreams are always interesting because they are new and different.....SD D N A SA

26. I do not enjoy daydreaming.....SD D N A SA

27. I like to think of ways to embellish tales which have been told to me.....SD D N A SA

28. When I am going to make something new and different I can see it clearly in my mind before I begin.....SD D N A SA

29. When I review things that have happened to me during the day I can picture each of them in my mind.....SD D N A SA

30. When I look at a picture of any scene I can close my eyes and visualize ways that it could be made better.....SD D N A SA

31. Sometimes I dream of things which I later make or do.....SD D N A SA

32. I like to create fantasies in my mind.....SD D N A SA

33. After I have seen a movie or play I can close my eyes and vividly see what happened in the best parts.....SD D N A SA

34. I have vivid daydreams/dreams with strange colors and sounds.....SD D N A SA

35. Sometimes I dream of things which lead me to new insights and discoveries.....SD D N A SA

36. I have experienced moments of inspiration and creativity when artistic expression, ideas, or the solution to problems that I have struggled with came to me with a special intensity and clarity.....SD D N A SA

INSTRUMENT 3

TORRANCE TEST OF CREATIVE THINKING,
FIGURAL TEST A

THINKING CREATIVELY WITH PICTURES

By E. Paul Torrance

FIGURAL BOOKLET A

NAME_____

AGE_____ SEX_____

SCHOOL_____

GRADE_____

CITY_____

DATE_____

SCHOLASTIC TESTING SERVICE, INC.
480 Meyer Road, P.O. Box 1056
Bensenville, IL 60106-8056

Activity 1. PICTURE CONSTRUCTION

On the opposite page is a curved shape. Think of a picture or an object which you can draw with this shape as a part.

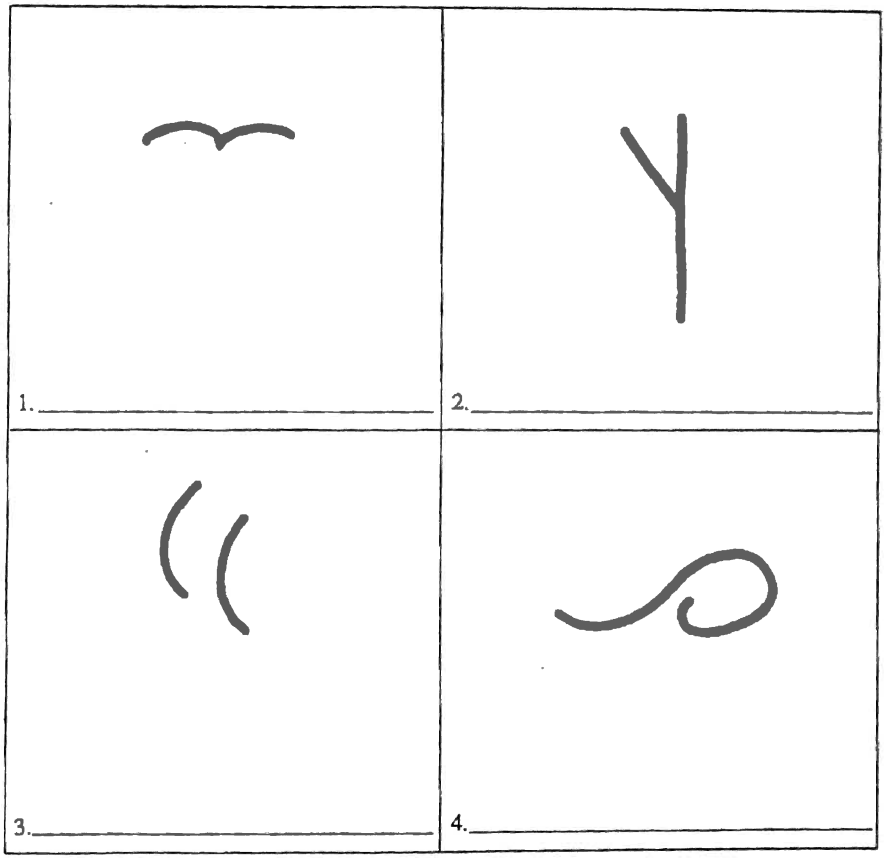
Try to think of a picture that no one else will think of. Keep adding new ideas to your first idea to make it tell as interesting and as exciting a story as you can.

When you have completed your picture, think up a name or title for it and write it at the bottom of the page in the space provided. Make your title as clever and unusual as possible. Use it to help tell your story.

YOUR TITLE: _____

Activity 2. PICTURE COMPLETION

By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.



5. 	6. 
7. 	8. 
9. 	10. 

Activity 3. LINES

In ten minutes see how many objects or pictures you can make from the pairs of straight lines below and on the next two pages. The pairs of straight lines should be the main part of whatever you make. With pencil or crayon add lines to the pairs of lines to complete your picture. You can place marks between the lines, on the lines, and outside the lines—wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles in the spaces provided.

1._____ 2._____ 3._____

4._____ 5._____ 6._____

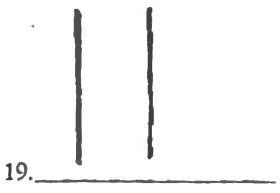
7. _____ 8. _____ 9. _____

10. _____ 11. _____ 12. _____

13. _____ 14. _____ 15. _____

16. _____ 17. _____ 18. _____

GO ON TO NEXT PAGE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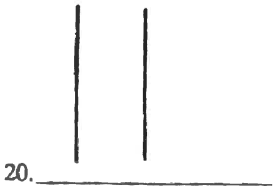
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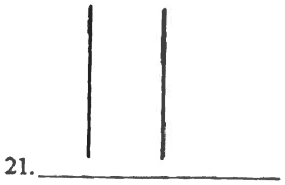
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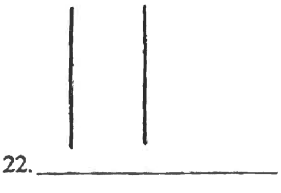
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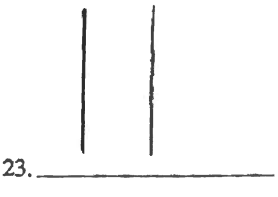
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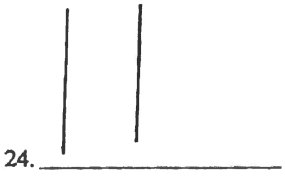
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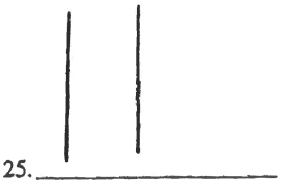
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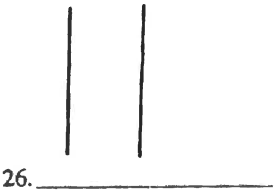
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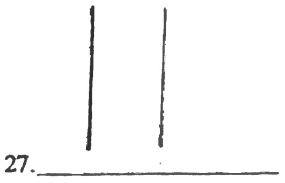
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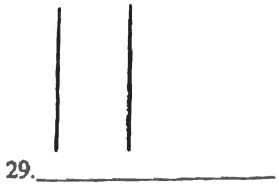
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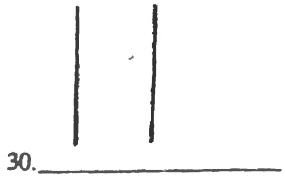

30. _____

INSTRUMENT 4

STREAMLINED SCORING SHEET

STREAMLINED SCORING SHEET
TORRANCE® TESTS OF CREATIVE THINKING, FIGURAL FORMS A and B

Name:_____ Test Date:_____ Form:_____

Grade:_____ Age:_____ Sex:_____ School:_____

	Raw Score	Standard Score	National Percentile
1. Fluency: Act. 2_____ + Act. 3_____ =			
2. Originality: Act. 1_____ + Act. 2_____ + Bonus_____ + Act. 3_____ + Bonus_____ =			
3. Abstractness of Titles: Act. 1_____ + Act. 2_____ =			
4. Elaboration: (Circle appropriate number 1-6 for A *or* B)			
A — Act. 1: 1(0-5) 2(6-12) 3(13-19) 4(20-26) 5(27-33) 6(34+)			
A — Act. 2: 1(0-8) 2(9-17) 3(18-28) 4(29-39) 5(40-50) 6(51+)			
A — Act. 3: 1(0-7) 2(8-16) 3(17-27) 4(28-37) 5(38-47) 6(48+)			
B — Act. 1: 1(0-5) 2(6-13) 3(14-21) 4(22-29) 5(30-37) 6(38+)			
B — Act. 2: 1(0-9) 2(10-19) 3(20-29) 4(30-39) 5(40-49) 6(50+)			
B — Act. 3: 1(0-14) 2(15-24) 3(25-34) 4(35-44) 5(45-54) 6(55+)			
=			
5. Resistance to Premature Closure: Act. 2_____ =			
Average Standard Score =			

Ability	Interpretation								
1. Fluency									
2. Originality									
3. Abstractness of Titles									
4. Elaboration									
5. Resistance to Premature Closure									
Standard Score	40	60	80	100	120	140	160	180	
Percentile		2	16	50	84	98	99+		

Checklist of Creative Strengths:

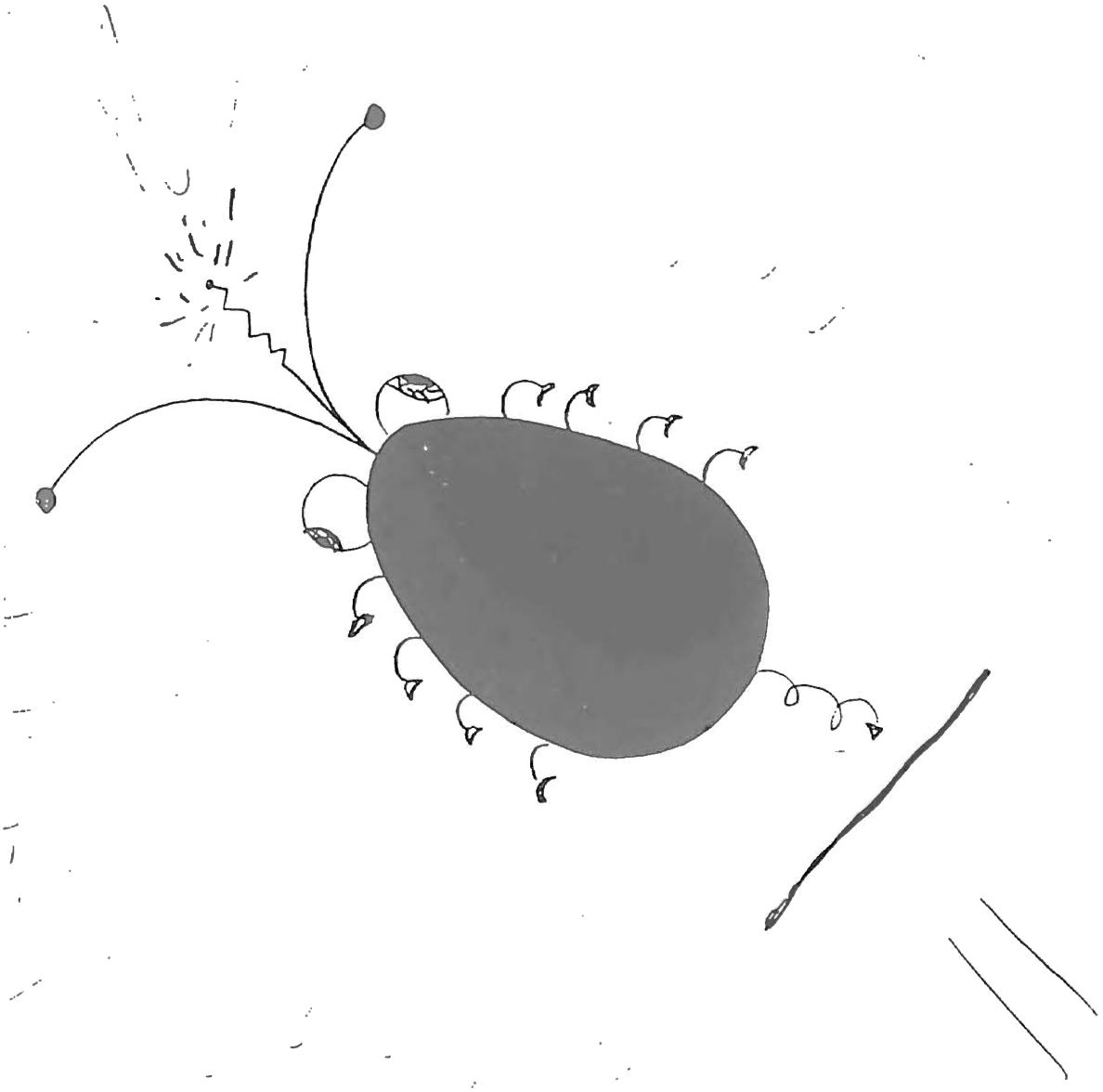
_____ 1. Emotional Expressiveness (in drawings, titles)
_____ 2. Storytelling Articulateness (context, environment)
_____ 3. Movement or action (running, dancing, flying, falling, etc.)
_____ 4. Expressiveness of Titles
_____ 5. Synthesis of Incomplete Figures (combination of 2 or more)
_____ 6. Synthesis of Lines (combination of 2 or more sets, Activity 3, Form A) *or* Synthesis of Circles (combination of 2 or more, Activity 3, Form B)
_____ 7. Unusual Visualization (above, below, at angle, etc.)
_____ 8. Internal Visualization (inside, cross section, etc.)
_____ 9. Extending or Breaking Boundaries
_____ 10. Humor (in titles, captions, drawings, etc.)
_____ 11. Richness of Imagery (variety, vividness, strength, etc.)
_____ 12. Colorfulness of Imagery (excitingness, earthiness, etc.)
_____ 13. Fantasy (figures in myths, fables, fairy tales, science fiction, etc.)

Creativity Index: Average Standard Score_____ + Bonus_____ = _____ Standard Score _____ National Percentile

Comments:_____

INSTRUMENT 5

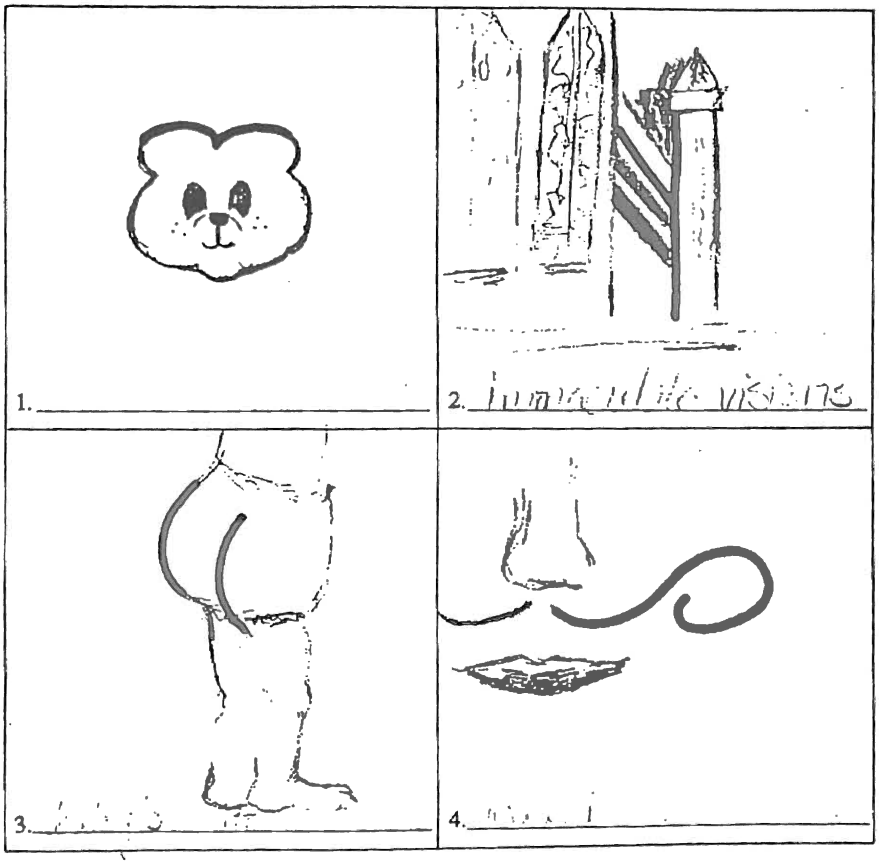
COMPOSITE SAMPLE OF ANSWERS FROM
TORRANCE TEST OF CREATIVE THINKING,
FIGURAL TEST A



YOUR TITLE: 2-way creature

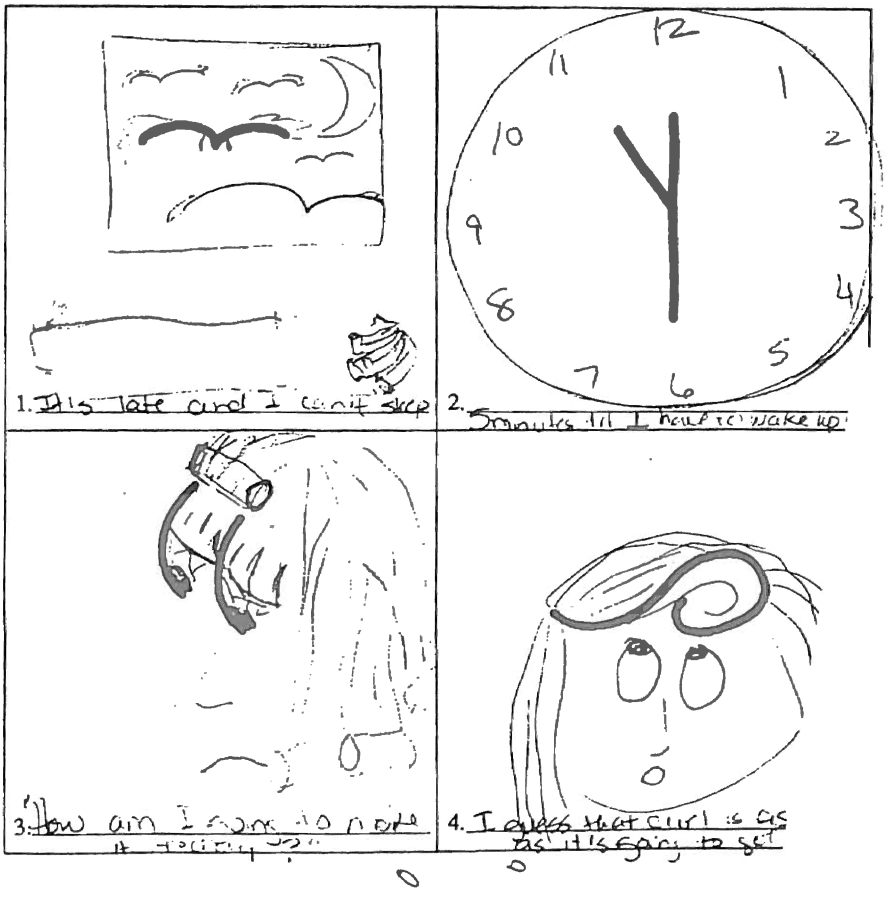
Activity 2. PICTURE COMPLETION

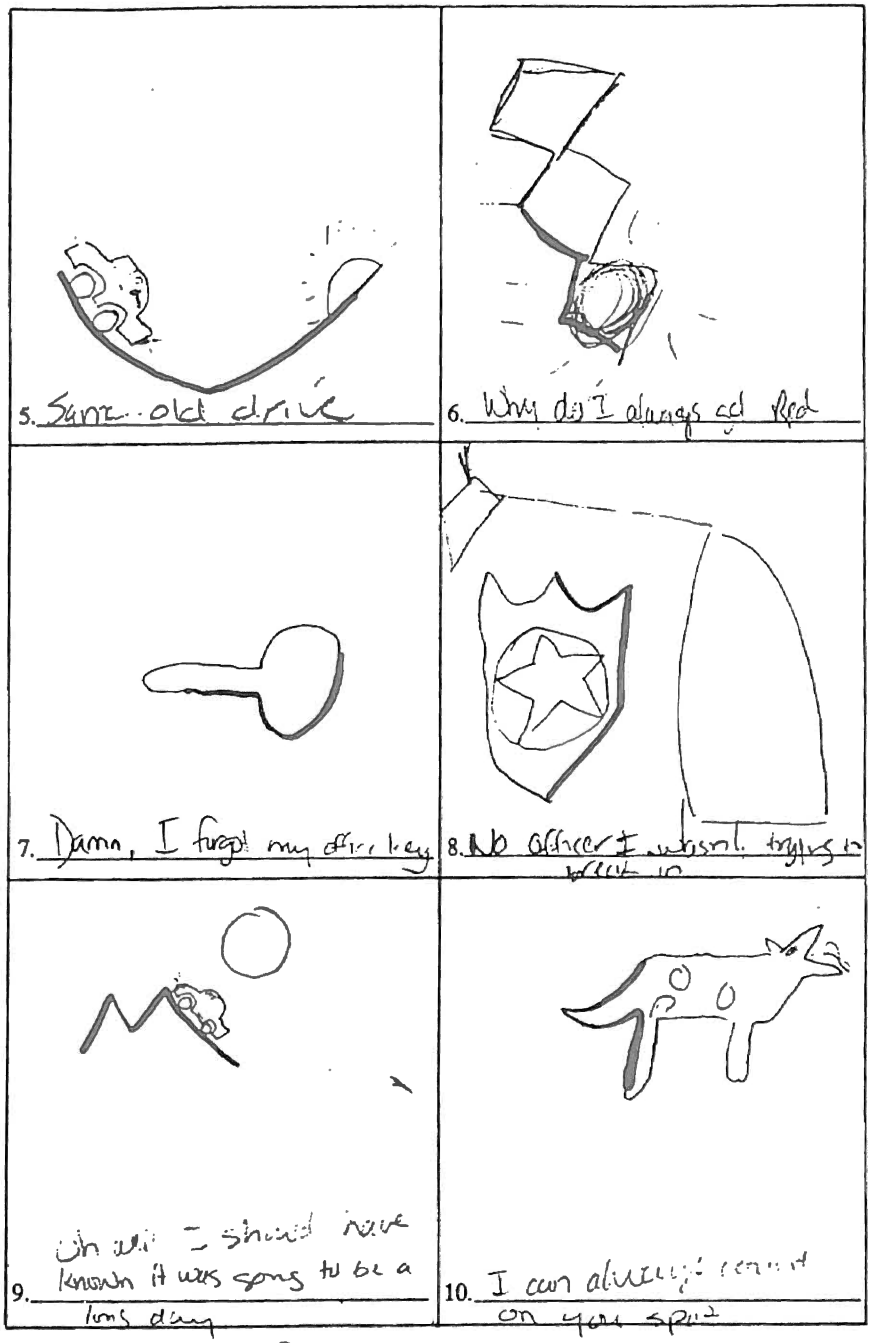
By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.

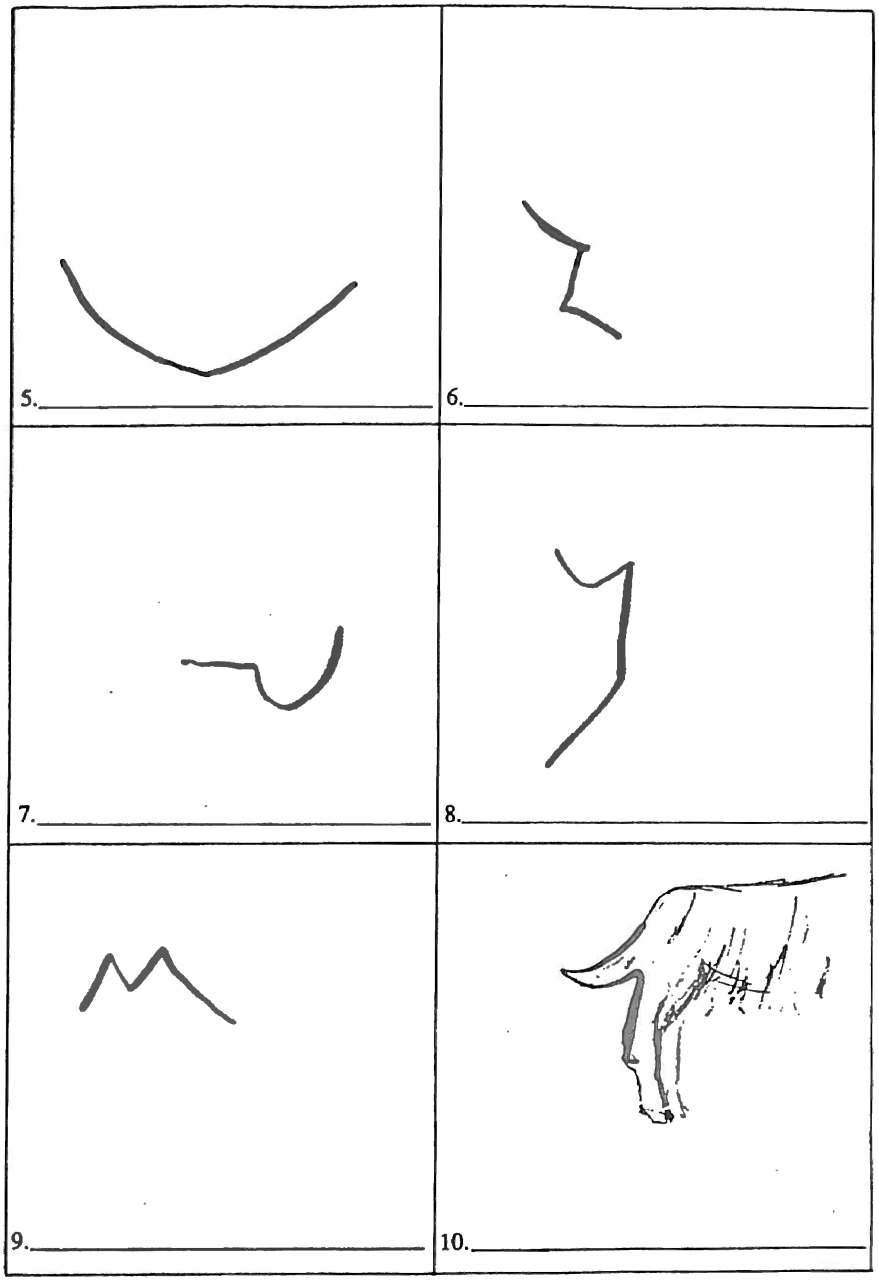


Activity 2. PICTURE COMPLETION

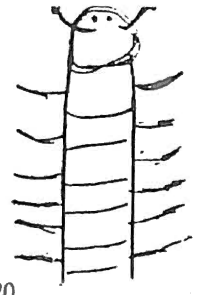
By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.




5. Same old drive
6. Why do I always get Red
7. Damn, I forgot my office key
8. No officer I wasn't trying to
9. Oh shit I should have known it was going to be a long day
10. I can always count on you

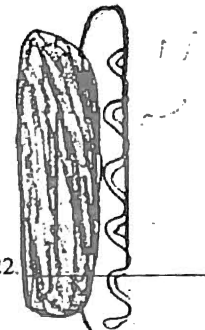

5.
6.
7.
8.
9.
10.

19. Pinball

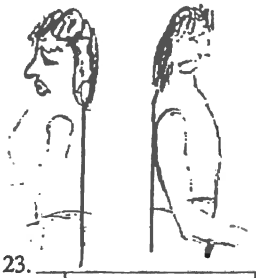


20. Centipede

21. PEEPER



22. The Dog



23. going to a site warp 0

24. Bullet in the Chamber

25. Slugo

26. Root Hole

27.

28.

29.

30.

APPENDIX C

MISCELLANEOUS

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Proposal Title: INFLUENCE OF INTERNAL SENSATION SEEKING FACTORS ON CREATIVE PRODUCTION.

Principal Investigator: Dr. M Weber & C. Catsis

Date: April 13, 1992 IRB # HE-92-048

This application has been reviewed by the IRB and

Processed as: Exempt [XX] Expedite [ ] Full Board Review [ ]

Renewal or Continuation [ ]

Approval Status Recommended by Reviewer(s):

Approved [XX] Deferred for Revision [ ]

Approved with Provision [ ] Disapproved [ ]

Approval status subject to review by full Institutional Review Board at next meeting, 2nd and 4th Thursday of each month.

Comments, Modifications/Conditions for Approval or Reason for Deferral or Disapproval:

Comments: Be sure to tell students that participation is voluntary.

Signature: Marcia L. Tilley Date: April 13, 1992
Chair of Institutional Review Board

VITA

Connie Thibeau Catsis

Candidate for the Degree of

Master of Science

Thesis: INFLUENCE OF INTERNAL SENSATION-SEEKING TRAITS ON CREATIVE PRODUCTION

Major Field: Design, Housing, and Merchandising

Biographical:

Personal Data: Born in Warrensburg, Missouri, May 5, 1945, the daughter of Roger R. and LaVera Thibeau.

Education: Graduated from Kubasaki High School, Ryukyu Islands, Japan, June, 1963; Strayer Jr. College, Washington, D. C., June, 1965; Received Bachelor of Science degree from the University of Maryland, June, 1969; University of Houston, 1973; completed requirements for the Master of Science degree at Oklahoma State University in May, 1993.

Professional Experience: Commercial and residential interior designer in Houston, Texas; Vancouver, B. C.; Farmington, Albuquerque, and Santa Fe, New Mexico; Portland, Maine 1970-1990. Graduate teaching assistant at Oklahoma State University 1990-1992.